

POPULAR **Computing** **WEEKLY**

Only 50p.

28 August–3 September 1986

Vol 5 No 35 ISSN 0265-0509

Spectrum Plus 2 launches next week

**PCW show
preview issue**

Full story inside

Art Director on the Atari ST

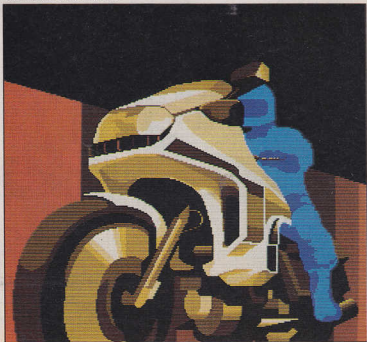
**All the
autumn's
launches on
display**

**Including – new
from Mirrorsoft:
Art Director**

News Desk

**Saga Compliment
and Baby BBC –
full details**

**Commodore 64c's
pricing revealed**



**"GAMES AT THE
SPEED OF LIGHT..."**

A NEW GAMES LABEL FOR AUTUMN '86

**PURE, ORIGINAL ARCADE ACTION
FEATURING THE INCREDIBLE....**

LASERMATION™

**FROM THE MAKERS OF GARGOYLE GAMES....
THE GAME MASTERS**

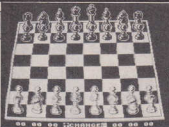
FTL
FASTER · THAN · LIGHT

AVAILABLE FOR ALL MAJOR FORMATS

SOFTWARE ▶

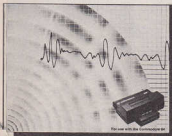
13 Chess

The seemingly endless *Colossus Chess* series has now reached the Spectrum – and will run up against competition from *Psi Chess*, new from The Edge.



15 Preview: Art Director

Due to be unveiled at the PCW show, Mirrorsoft's *Art Director* is a sophisticated graphics package for the Atari ST.



16 Magic Voice

Relaunched, repackaged, repriced – Commodore's speech synthesiser is now available from Faculty Enterprises.

19 DolphinDOS

Chris Jenkins investigates a device to speed up the operation of your 1541 disc drive.

GAMES ▶

20 Reviews

This week's selection includes MikroGen's new hero *Stainless Steel*, Germany 1985 from US Gold and *L'Affaire Vera Cruz*, from French company Infogrames, which has now set up a UK office.

22 Arcade Action

Including this week's Gallup Top Twenty.

23 Adventure Corner

Help with spell casting and things magical from Tony Bridge.



26 QL

Easy plotting of co-ordinates from I Fisher.

27 BBC

Musicians take note: keep in time with our metronome program.

27 Commodore 64

Lose your marbles with Queue Bert.

28 Spectrum

Structured programming.

29 Amstrad CPCs

Print characters at half width.

30 Amstrad CPCs

A simple to use search facility.

31 Bytes and Pieces

32 Peek and Poke

REGULARS ▶

4 News Desk

Micropose sets up UK division.

8 PCW show preview

Who's going to launch what at Sep-

tember's *Personal Computer World* show.

10 Letters, Puzzle

34 Communications

Electronic mail services.

35 Soundcheck

Improve your Midi connections.

44 New Releases

46 Ziggurat, Hackers

Editor Christina Erskine News editor John Lettice Features editor John Cook Technical editor Duncan Evans Production editor Michelle Beauchamp Supplements editor Christopher Jenkins Supplements designer Barbara Hajek Advertisement and Promotions manager Simon Langston Assistant advertisement manager David Osen Advertisement executive Jon Beales Classified executive Rodney Woodley Editorial secretary Annmarie O'Dwyer Administration Geraldine Smyth Managing editor Peter Worlock Publishing director Jenny Ireland. Published by Sunshine Publications Ltd, 12-13 Little Newport Street, London WC2H 7PP. Tel 01-437 4343 Telex 296275 Typeset by Magazine Typesetters, 6 Parnell Court, East Portway, Andover, Hampshire. Printed by McCorquodale Magazines, Andover, Hampshire. Distributed by S M Distribution, London SW9, Tel 01-274 8611, Telex 261643. © Sunshine Publications Ltd 1986.

Popular Computing Weekly. Tel: 01-437 4343.

ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

The Plus 2: more details

AMSTRAD'S Spectrum Plus 2 will appear at the PCW Show next week and as predicted (see last week's issue) will sell for £149. For this you'll get a grey (that's right, not black) machine with full travel keyboard and built-in tape deck in the style of the Amstrad CPC 464.

The machine is functionally identical to the 128K Spectrum, but has RGB, RS232 and midi ports and an expansion facility for Microdrives, although Amstrad is more likely to produce a disc drive in the way of expansion than to resume Microdrive production.

The Plus 2 also has twin joystick ports, but it is thought that these are non-

standard, and will require special Amstrad/Sinclair joysticks.

Amstrad is also considering badging a disc drive for the machine, with the Opus Discovery a strong contender, but this has the disadvantage of being 3½ inch, while until the PC's launch Amstrad's standard was 3 inch. Information received by *Popular* does, however, indicate that a prototype Sinclair drive for the Spectrum does exist, and that it is 3½ inch.

The drive will fit on to the back of a Spectrum, and according to an eye-witness has various different kinds of output sockets on the back, but as yet no connections to them.

Amstrad 20Mb PC?

AMSTRAD may be poised to confound the pundits next week by launching its full range of PC compatible machines, including a sub-£1,000 version with 20Mb hard disc, in one fell swoop. Until now it has been thought that the company intended to offer only four configurations of single and double disc drive and mono and colour monitor, but the machines' specifications and price have now been so widely leaked that Amstrad may feel it needs a slight edge to avoid creating disappointment among potential buyers.

A further factor will have been the continuing fall in the price of hard disc units, and the fact that many of Amstrad's rivals in the PC market are already selling cheap hard disc models. There is for example the PC 4/8 from Personal Computer Compatible, which is compatible with the AT (IBM's 80286-based follow-up to the PC) and sports 20Mb hard disc and 512K Ram for £995.

With configurations like this becoming more and more common Amstrad may feel if it waits much longer it will miss the boat.



Tandy's portable 102 - 24K and built-in modem for £350. See last week's issue for more details



The Amiga: going for more sales?

Commodore denial on cheap Amiga

COMMODORE is thought to be planning a cheaper version of the Amiga for sale in this country. The machine is to have 256K Ram and single disc drive, TV modulator and will sell without monitor for £700-£800. Commodore UK, however, denies that the machine will appear this year. "If we do anything it won't be before Christmas," says Commodore UK's general manager.

This, of course, leaves the UK, where the Amiga and the 128 have made no significant impact, out of step with the US, but the fact that Commodore's total unit sales increased by 74 per cent while dollar sales increased 128 per cent (ie the company is selling more expensive machines) goes some way to explaining the company's apparent lack of interest in a price war with its home computer rivals.

The company has meanwhile turned in a profit for the first time in 21 months. Commodore International posted a profit of \$1.2 million (about £0.80 million) for the quarter ended June 30. On net sales of \$208.6 million (£139.8 million) this is nothing to write home about, but as Commodore lost \$124 million (£83.1 million) on sales of \$131.9 million (£88.4 million) in the

same period last year it may be a sign that the company is starting to turn the corner.

In order to get this far Commodore has streamlined its operation considerably, cutting stocks and shedding 1,500 people - 30 per cent of its staff. The increase in sales revenue is due in considerable part to the Commodore PCs, the Amiga and the 128. According to Commodore International President Thomas Rattigan these now represent two thirds of the company's revenues.

● COMMODORE'S new 64c is now to be launched at the PCW Show next week, and will retail in this country as part of a £249.99 bundling deal. The earlier version of the 64 - to which the 64c is functionally identical - is being discontinued, and is likely to be discounted heavily by dealers.

The 64c is therefore going to hit the stores at a higher price than its major rival, the £149 Amstrad/Sinclair Spectrum Plus 2, while at the same time Commodore has performed the remarkable feat of competing with itself. The 64 will be much cheaper than the 64c, while the more powerful 128, where it can be found, is also retailing for under £200.



Microprose's AcroJet

Microprose to start up new UK company

MICROPROSE, the US company responsible for *F15 Strike Eagle*, *Silent Service* and *AcroJet*, has formed a UK based subsidiary to develop its activities here and in Europe. Earlier this year Microprose announced that it was looking for a UK managing director to improve its profile here, and has now appointed Stewart Bell.

The new company, Microprose Software (UK), will continue to work with US Gold on Atari 800/130 and Commodore 64 software, but will also source Microprose US's IBM, Apple and ST software to UK distributors, and will be looking to send licensed UK software back to the States and to Europe. A UK office should be set up by the beginning of October.

10Mb Amstrad

ACC Computer Services has produced a 10Mb hard disc system for the Amstrad PCW 8256/512 and the Tatung Einstein. The system's basic retail price of £695 includes power supply, controller and host adapter.

Details from ACC Computer Services, 8 Water Street, Abergele, Clwyd LL22 7SH (0745 826235).

Geos on sale

GEOS, the graphic environment to be bundled with the Commodore 64, is to be sold in this country by First Analytical. First will retail it for £49.95.

Details from First Analytical, 6 Newcomen Street, London SE1 1YR. Tel: 01-524 5630.

Full specifications on Acorn's new BBC

ACORN is to launch its new micro, to be called the Master Compact, at the PCW, and is thought to have stocks of 2,000 of the machines ready for sale after the launch date.

According to one software developer who has been working on the new machine it looks like "an RML 480Z - except it's white." The keyboard layout is basically that of the Master, apart from the "@" symbol, which has been moved, and the appearance of a code key and a mysterious extra key that "doesn't seem to do anything."

The back of the machine houses RGB, composite, Acorn-style RS232 port, Econet interface, Atari D-type joystick port, disc port, power socket and Centronics

port. The Centronics port appears to be the same as used on the Atari ST and the IBM PC, perhaps betraying a belated interest in standardisation on Acorn's part. The 3½ inch disc drive is to be bundled with the machine fits on to it in an Electron-style L shape, but significantly, although the machine has tape drive software in its Rom, there's no tape socket. Whether or not BBC B software will run on the machine is therefore largely academic, as you'll either need to transfer it to 3½ inch format first, or configure the RS232 as a tape port.

Inside, the machine has four spare Rom sockets, space for an Econet board and a speech chip.

The keyboard, says the de-

veloper, is one of the best he's ever used - far superior to the Master's, while the one-third height disc drive is both compact and fast. He estimates a four-fold speed increase over the Master.

The machine is expected to retail with monochrome monitor for around £400, and colour for £500, and is rumoured to be aimed at the games market. These prices put it well out of range of what the market will bear, but the specifications may give a clue to Acorn's plans. The machine has tape driver software and the disc unit is plug-in rather than built-in. Could Acorn be planning to sell a low-cost version of the machine with plug-in tape deck?

Saga plans new Spectrum

THE launch of the Compliment, Spectrum add-on supplier Saga's first venture into the micro market, has been scheduled for October 20. The Compliment is intended to do for the Spectrum what CST's Thor does for the QL, and will be supplied as a bundled upgrade that will turn the lowly Spectrum into a professional Amstrad-style workstation.

For £344 retail, customers

will get a new keyboard, 3½ inch disc drive with 256K capacity, a high quality printer, Saga's *Last Word* word processing program and *Trans-Express*, the tape/disc/Microdrive transfer program. Saga also hopes to include either a VTX5000 modem or a coupon for a modem. If this comes off it will be likely to be offered in conjunction with Micronet, which offers a free VTX along

with a year's Micronet subscription, but Saga will be trying to negotiate a discount on top of that.

The printer, which will also sell separately at £199.95, gives 150 cps in draft mode, 60 cps in correspondence and 25 cps NLQ (near letter quality). It has parallel interface and pin and friction feed.

Saga's David White refused to be drawn on rumours of full-blown Saga micros for launch in the near future, but he is known to have been interested in hardware production.

Alan Sugar intends to maintain Sinclair as Amstrad's games label, and this will leave both serious Spectrum users and add-on suppliers like Saga high and dry.

Spectrum compatibility will therefore be important for any machines Saga brings out, but will be difficult to achieve. Most of Sinclair's old suppliers hold stocks of Spectrum parts, but a shortage of ULAs means these can't be assembled into complete units, and Amstrad is unlikely to allow further components to be produced.



Saga's 2001 keyboard



Interfaces for the Amstrad

MICRO Control System has launched two interfaces for the Amstrad PCW8256/512. A parallel only interface costs £48.24, while a dual serial and parallel model is £57.65, considerably cheaper than Amstrad's own version.

Details from Micro Control Systems, Electron House, Bridge Street, Sandiacre, Nottingham NG10 5BA. Tel: 0602 391204.

Miraculously free Gold box

FREE mailboxes for Telecom Gold, BT's electronic mail service, are being offered to all purchasers of Miracle Technology modems. The WS4000 and 3000 series modems are included in the offer, and as part of the promotion Telecom Gold and Miracle are to be joint part-

ners in a series of electronic mail seminars to be held in London later this year.

Details from Miracle Technology, St Peters Street, Ipswich IP1 1XB (0473 216141).

Organiser to Transform QL

TRANSFORM is now selling a package which provides a link between the QL and the Psion Organiser. It consists of an RS232 lead plus software to allow file transfer between the two. Other software included is Transform's *Mail List* program for the QL, which allows names and addresses to be recorded, procedures to download to the Organiser to find, display edit and add to *Mail List* files; *Organiser to QL*, allowing existing Organiser files and procedures to be backed up and recovered; and *Organiser to Printer*, which uses the QL as a terminal to

print out from the Organiser.

The complete package costs £39.95, and is to be followed by a similar pack linking *QL Stock Control* to the Organiser.

Details from Transform, 24 West Oak, Beckenham, Kent BR3 2EZ. Tel: 01-658 6350.

PC mouse from Kempston

KEMPSTON has followed up the launch of its mouse for the Amstrad CPC series with a version for the IBM PC and compatibles. The device is a three button optical mouse, driven through an RS232 port, and the full system consists of mouse, Rom driven interface board, RS232 cable, installation guide and test software.

It is compatible with a wide range of mouse driven software, including *Autocad* and

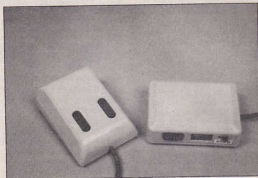
PC Paint, and costs £99.

Details from Kempston, Unit 4, Manton Lane, Bedford MK41 7HY (0234 327544).

Memotech guide is published

PHOENIX Publishing Associates has identified "the recent flurry of interest in the resurrected Memotech" as reason to publicise its new operator's manual for the machine. Whatever, the manual provides an extensive guide to the Memotech's Basic, assembler, system variables and disc systems, and should be of value to owners of the machine. The manual retails at £8.95, or is available by mail from Phoenix at £9.95.

Details from Phoenix Publishing Associates, 14 Verndon Road, Bushey, Herts WD2 2JL (0923 32109).



Diary Dates

SEPTEMBER

3-7 September

Personal Computer World Show

Olympia, London

Details: Software and hardware for home, educational and business computer users.

Price: £2.

Organiser: Montbuild, 01-487 581.

12-14 September

8th Official Commodore Computer Show

UMIST, Manchester

Details: A wide range of Commodore hardware, software and peripherals.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

26-28 September

Electron and BBC Micro User Show

UMIST, Manchester

Details: Software, hardware and peripherals for BBC machines.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

OCTOBER

3-5 October

The Amstrad Computer Show

Novotel, London

Details: Home and business software and hardware for the Amstrad range.

Price: £3 adults, £2 children, £1 discount for advance booking.

Organiser: Database Exhibitions, 061-456 8835.

30-31 October

Hampshire Computer Fair

Guildhall, Southampton

Details: Business computers.

Price: Free entry by business registration.

Organiser: Testwood Exhibitions, 0703 31557.

NOVEMBER

7-9 November

Electron and BBC Micro User Show

New Horticultural Hall, Greycoat Street, London SW1

Details: Hardware, software and peripherals for the Electron, BBC micro and Master series.

Prices: £3 adults, £2 children, £1 discount for advance booking.

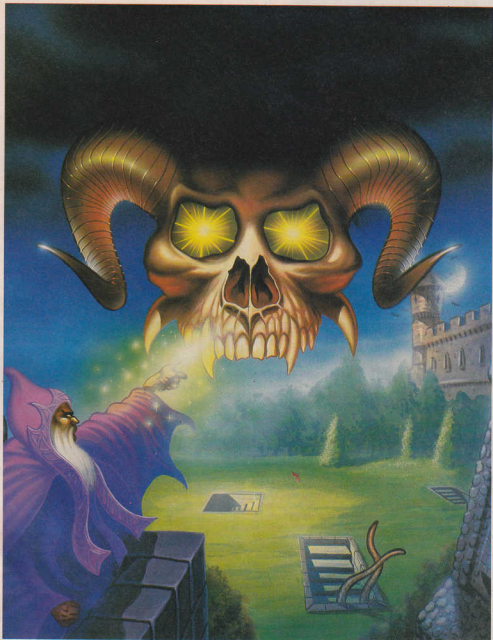
Organiser: Database Exhibitions, 061-456 8835.

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

Enter Into The Magical World Of Druid. Experience The New And

Daringly Original Arcade Adventure. It's What You've Come

To Expect From Firebird... Publishers Of The U.K.'s Most Exciting Software



£7.95

DRUID

£7.95



firebird
FIREBIRD SOFTWARE
FIRST FLOOR, 64-76 NEW OXFORD ST., LONDON WC1A 1PS

Available for Commodore 64,
Spectrum 48.128 and Amstrad.



Firebird is a Registered Trade Mark of British Telecommunications plc.

MAIL ORDER

Please state name of game, machine, cassette or disk and quantity required.
Enclosed crossed cheque/PO made payable to FIREBIRD SOFTWARE. All
orders are subject to availability. Orders are dispatched promptly. All prices
inclusive of VAT and postage.

MAIL ORDER: AUNTIE KAY, 'FREEPOST FIREBIRD, FIRST
FLOOR, 64-76 NEW OXFORD ST., LONDON WC1A 1PS.

*No stamp required

Old faces, but new machines

John Lettice predicts that potential hardware buyers will be spoilt for choice this autumn

If the advance publicity on the **Amstrad PC** – practically none of which has been directly generated by Amstrad – is to be believed, next week's *Personal Computer World* show will usher in a new era of low-cost serious computing on the back of the Amstrad PC. Amstrad will have launched the PC series on September 2, the day before the start of the show, and will be relying on the machine's low entry level price of £460 (£399 ex Vat) and blanket coverage in the press to draw the crowds.

The company will be followed down the PC road by

the likes of **Opus** and **Spec-trum**, both of whom have moved into the cheap clone market, and by sundry other hardware and software suppliers. The software market will be worth watching, as suppliers fight to bring PC programs down to a level compatible with the hardware's new prices. **New Star**, which has pioneered cheap software for the Amstrad PCW, and **First Software**, which has joined in with a low-cost *dBase II* and promises of a cheap PC integrated package, will be among the companies to watch.

But Amstrad and the PC won't have it all their own way, and could already have been the subject of a pre-emptive strike by **Atari**. The company is thought to be preparing to announce a com-

Basic and operating system from Metacomco, the company which wrote AmigaDOS.

Atari is also thought to be about to announce a cheap laser printer for the machine,

"But Amstrad and the PC won't have it all their own way"

bination of products, and these could include the 2040 ST, a souped-up 2Mb version of the ST with full 68020 processor. The machine will in all probability sport *Microsoft Write* word processing software, and should have

allowing it to challenge the Apple Macintosh in the electronic publishing field. The company is organising its 1,000 square foot stand as an "Atari Village".

Other stabs at Amstrad will come from **Tatung**, which

The year of the coin-op conversion

John Cook, delirious with anticipation, surveys the software to be launched at the show

Ariolasoft, not content with a single stand, has hired two. One for previewing games, one for selling T-Shirts, games, etc, etc.

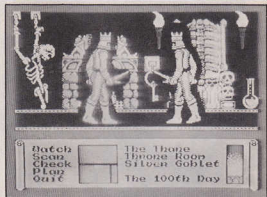
Games being released include *Terrors of Trantos* and the *Seven Cities of Gold* follow up, *Heart of Africa*. Hands on previews number *Deactivators* and the launch of its strategy/adventure label *39 Steps with They Stole a Million*.

Prepare to be awed at *Marble Madness* running on the Amiga, but if you are into cartoons, watch the videos of *Gobots* and *Centurion* for which Ariola has recently picked up the licences.

When **Beyond** says that it's setting up an Enterprise zone on its PCW stand, the suspicious might think it a dodge to pick up millions in government grants. Worry not. In fact it means that the stand is to largely consist of a mock-up of the bridge of the famous starship of the same name. *Star Trek* mania has started – and although neither the game or any of the actual TV characters are likely to be in attendance, who would pass up the opportunity to sit in That Chair.

Other than this Trekkie shrine, various other titles will be on video demo, to wit: two titles from the emancipated Denton Designs team (*Infodroid* and *Dante's Inferno*), Mike Singleton's *Dark Septre*, and a compilation called *The Best of Beyond*.

Elite says it is pushing the boat out this year, with its three current releases, *Paper Boy*, *1942* and *Scoby Doo* on



show to play, as well as a selection of its £2.99 Classics.

Arcade machines will be available for public use, to promote its next coin-op conversions – although you'll have to fight your way to get to the *Space Harrier* machine. If it gets that faithfully recreated on the Spectrum, Elite MD

"The coin-op craze continues"

Steve Wilcox will be hailed as the new Messiah.

The coin-op craze continues on the **US Gold** stand, with no less than eight on display – the stars being *Gauntlet* and *Express Raider*.

Following up are *Xenious*, *Breakthru* (the ingenious

Breakout sequel), *Infiltrator*, *Super Cycle*, *Hot Wheels* and *Crystal Castles*, plus video demos of other forthcoming releases. One thing's for sure, the arcades are going to be empty from Sept 5–7.

Popular predicts the quiet hit of the show to be **Firebird's Cholo**, again on the BBC B. It looks like a cross between *Mercenary*, *Tay Cel* and *Hacker* – with a whole load of new elements thrown in. Probably won't be available as a hands on game, but at least you can tell your Grandchildren that you saw it first at the 1986 PCW show!

Odin will be sharing the **Firebird** stand, and the new products will include *Heartland* – now on Amstrad as well as Spectrum – the recent arcade releases of *ICUPS* and





Opus II: in the cheap clone market

will be launching its successor to the Einstein. This machine will be priced competitively with the PCW, but will sport the video chip used in MSX 2 machines, which provides a 512 colour palette and control over pixel colours in hi-res mode. It also features stereo sound and light pen and video camera interfaces, and is to have video frame grabber and hard disc shortly.

Mission AD, plus a preview of its autumn release *Hyper-Ball*. Shades of Rollerball here – don't miss it.

Firebird is hitting the show with a combination of video demos and hands on action. Plenty of conversions – Spectrum and Amstrad *Druid* are particularly impressive, with strong supporting cast of Amstrad *Starstrike II* and Silver range goodies including *Warhawk* (CBM), *Bomb Scare* (Spectrum) and finally a Spectrum version of *Thrust*, which is well up to par, after the embarrassment of the Atari and Amstrad jobs which are unlikely to turn up.

"Rainbird... has a strong stable of programs on display"

Originals on display (at least in demo form) for the first time include the latest Torus epic – *The Hive*, *Pandora* (an arcade adventure coded by the soon-to-be-legendary Shahid Ahmad), and *Sentinel* (described as a strategic game of energy, with over 10,000 landscapes). This would normally be casually dismissed as marketing hype, but seeing as Geoff Crammond of *Revs* and *Aviator* fame is behind the design, rate it as worth a look on BBC B (conversions are planned).

Mirrorsoft will be early tar-

Like the PCW, it'll run CP/M software.

Acorn has also picked the show for the launch of its BBC Master Compact (see News Desk). This machine is being spoken of as the company's attempt to break back into the games market, but although it's liable to be backed up by a reasonable sized range of games titles at the launch the high price – of disc versions



gets for PCW owners, with the launch of *Fleet St Publisher* – an advanced version of *Fleet St Editor* which it will also be showing on BBC, Amstrad CPC, PC Compatibles and the ST.

Games include Spectrum and CBM versions of *Strike Force Harrier*, the mind-bogglingly named *Icon John* (Am-

of the machine at least – is likely to dampen the machine's impact.

Commodore's belated decision to attend the PCW show has been followed up

"Sinclair is scheduled to return"

by a similarly belated decision to show the new 64c there (see News Desk). The company has, however, booked itself the business hall, which is hardly targeting the 64c's market. A few software houses will, however, be showing the machine on their stands in the home computer, so all is not lost.

Sinclair is scheduled to return to the show under the Amstrad banner, but at least the Spectrum Plus 2 will have

Left: *Deactivators* on Ariola's new Reaktor label. Right: *Rainbird's Star Glider*

Sinclair of *Magnetic Scrolls* lurking somewhere nearby, almost certainly not crossing swords with those nice chaps from **Level 9**, whose acclaimed trilogy *Jewels of Darkness* will be shown, together with another surprise package it is releasing under *Rainbird's* auspices.

Rainbird will also be publically unveiling *Starglider* – billed as an ST based *Elite* basher – and a new wargame running on the 64 called *Tracker*. Utility fans need not feel left out either, as the *Music System* and *The OCP Art Studio* will be on demo.

Ocean – that tie-in giant – will be offering a whole range of goodies, including some computer games, funnily enough. Stand alone arcade machines will be in evidence to promote its autumn coin-op conversions; *MagMax* and *Terra Cresta* to name but two. Hands-on demos will be hot-off-the-presses stuff as and when it is robust enough to meet the general public, but will certainly include new releases *Parallax*, *Miami Vice* and the recently announced *It's a Knockout* – the antidote to sports simulations.

Video previews will include film extracts from *Highlander* and the movie currently number one in the States, *Top Gun*

a stand to itself in the home computing hall. But will Alan Sugar visit it?

Last but certainly not least, *Popular Computing Weekly* will be present at the show on stand number 3134. No expense has been spared to bring you a large number of designer T-shirts plus stocks of carrier bags nearly as good as everyone else is dishing out. And as a special show offer the first 100 people to report to the *Popular* stand bearing copies of the current issue will be allowed to buy us a drink.

The PCW show is to be held at Olympia in London, and runs from September 3-7. The first two days are for business, trade and professional visitors. From September 5, the show is open to the public.



– which is eventually destined to be a sophisticated flight simulator. Coming to your home computer soon.

Pride of place on the **Mas-tertronic** stand will be its new Magnum Joystick, for which the price has now been announced – £12.50. It'll be a case of 'look but don't touch' though, as the 'real' launch will be some two weeks after PCW.

Games on show include *Flash Gordon*, the latest David Jones masterpiece, *Storm-bringer* and an Amstrad arcade adventure, *Apprentice*.

Also on show, previews of US budget ST software... yes, ST budget software.

And **Activision** will, of course, be there. Hands on titles include *Hacker II* (this time you start off by hacking into your system) and the immortal *Howard the Duck*.

New **Infocom** adventures will be on hand – if you thought *Legend of the Amazon Women* was gratuitous, try *Leather Goddesses of Phobos* – as well as some fabby Gamestar sports simulations.

DirEdit debugged

Like your correspondent, G J Kent (*Popular*, 31 July) I found Alastair Scott's program, Amstrad DirEdit (*Popular* 17 July), most rewarding for the short time spent typing. Mr Kent's suggestion for adding in the standard period after the filenames also worked very well but not before correcting the following bugs which must have crept into the typesetting of his letter.

Line 940 should read: DIM file\$(16), user(16), rw(16), sys(16), er(16), le(16), qa\$(16), qb\$(16).

The entry that went missing was "sys(16)", and in line 570 the symbol between the two quote marks had to be a full stop.

Joseph G Berry
Davertry

Spectrum buccaneers

May I through the courtesy of your Letters page, bring to the attention of your readers news of a new Spectrum User Group, called the Buccaneers.

The aim of the group is to bring together those people fortunate enough to own the best little computer in the world (Alan Sugar, please take note).

I would particularly welcome new members who are able to write their own programs, in any language, who would be willing to pass on tips to those less able. Having

said that, let me hasten to add that all are welcome, regardless of abilities.

Everything comes absolutely free of charge. All the members do is send in a blank C60 tape, plus a suitable sized SAE to cover return postage.

New members may either forward a blank tape or SAE for more details. Why spend all those lonely hours at the computer, when you could share them with a close group, all with the same interests as yourselves?

G T Stavers
24 Eric Close
Forest Gate
London E7 0AY

Near letter quality

In Mr Colston's letter, *Popular*, 24 July, he wrote about low-cost printers.

I have a printer which is not unlike the Brother 1009 in size and shape, but it is excellent value for money in my mind. It is the Centronics GLP printer and for only £99 plus VAT, it can do all this:

It can print text in three different sizes, five cpi (40 characters per line), 10 cpi (80 characters per line), and 17 cpi (132 characters per line), with eight different print modes.

It can take cut sheet paper, roll paper and fan fold (with tractor unit) each up to 10 inches in width.

Its best feature, in my mind, is the Near Letter Quality mode, which prints characters in almost typewriter

quality. The speed of printing is quite fast: 50 characters per second in draft mode, 25 cps in NLQ mode.

Niel Markwick
Welshpool
Powys

Adventure enthusiasts

I am writing to inform readers of a new club which has been recently formed: Micro Adventure Club, for adventure enthusiasts.

We publish a monthly newsletter containing hints and tips, reviews, articles on adventuring, and helpline. Membership lasts for one year (12 issues) and costs only £5.

Anyone wishing to join is invited to contact us at the address below.

Alan S Milns
President
Micro Adventure Club
36 Glenartney Court
Glenrothes
Fife

Private Enterprise

I read in your magazine that Enterprise Computers had gone into receivership, so I thought it was time to remind all Enterprise users of the Independent Enterprise User Group (IEUG). This operates from 12 Whitegates, 100 Station Road, New Barnet, Herts EN5 1QB, and runs subscriptions for Private Enterprise magazine, which keeps

users in touch with new software.

IEUG will be running a stand at the PCW Show at Olympia in September.

The computer is still an excellent system, and it's sad to see the company call it a day, but with some good programmers about, it will continue in use for a long time.

Finally, I am the contact for IEUG in the Swindon area, so anyone living in that area can write to me.

Martin F Wallace
IEUG
61 Peartree Close
Purton
Swindon

Nigerian secrets

When I read the letter on the Nigerian board game *Ayo* in the issue of *Popular*, 3 July, the name meant nothing to me. However, I have now read David Robery's letter in the issue dated 17 July, and if B Clegg is still interested I may be able to help.

Orbis Publishing Ltd gave away a tape containing versions of *Awari* for the Commodore 64, Vic 20, Spectrum and BBC micros some time ago with an issue of their Home Computer Course. The tape is still in my possession, and if Mr Clegg cares to contact me on 091-273 7865 any evening after 6.0 pm I will be pleased to send it to him.

W H Foggion
Newcastle upon Tyne

Puzzle

Puzzle No 222

Think of a number.

Now write down all whole numbers which can be divided into it exactly – but do not include either the number itself or one.

Then add all of these divisors together and add the total to the number itself. This gives you a new number, so repeat the whole procedure. This should be continued until you are 'stuck' at a number which cannot be increased.

For example, starting with the number 12, you would write down its divisors six, four, three and two. These add up to 15 so this added to 12 gives 27. Continuing in this way we would have the series 12, 27, 39, 55 and 71.

After four steps we would reach 71, which having no divisors except for itself and one

would end the series.

Can you say which starting number in the range one to 1,000, will give you the highest finishing value?

Solution to Puzzle No 217

The horizontal numbers are: 281, 569 and 743. If these are placed in the grid, four additional primes are created: 257, 193, 263 and 167.

There are a total of 143 three-digit primes, so the array P(143) is created to hold these values. However, we are not interested in those primes which contain a zero, or those in which digits are duplicated. A suitable program would test values from 101 to 999 to screen out these factors and only those which pass the tests are entered into the array. This results in 83 values. Clearly, to fill the grid we

need possible triplets of values which do not contain duplicated digits, which can be incorporated into the program. All the values of combinations of triplets are converted into a single string. This string is then tested for duplication of digits. Then, the four other possible primes are extracted from this string and are tested for primality. Values which pass this test are printed out.

Winner of Puzzle No 217

The winner this week is Charles Dheere of Ghent, Belgium, who will be receiving 10.

Rules

The closing date for puzzle No 222 is 16 September.

Receivership blues

After reading your news regarding the special offer of an Enterprise 128K plus a TV Fidelity monitor (appeared in late 1985), I have ordered that special pack from McIntyre Marketing for £229 (phone order).

Because of problems with my Visa card, I sent them a cheque on February 25 which has been cashed only one month later.

In April I received a letter from Enterprise Computers, explaining that their contract with McIntyre Marketing had been concluded and that my order had been passed to them.

After many phone calls, I sent to Enterprise a copy of my cheque, proving my payment was effective. On receipt Enterprise answered me that they were willing to send me the pack, but asked me for a supplement (the new price was of £299.95). I sent them a photocopy of your article and maintained my order for £229, the price which had been confirmed to me by McIntyre Marketing by letter and on telephone.

In the beginning of July I received a letter from Grant Thornton, the receiver of Enterprise, telling me of its receivership and asking me full details of the amount owed to me. A second letter informed me that I was an unsecured creditor.

Could you please explain to me what is an unsecured creditor in the British law, and indicate to me which action I could undertake and against who (Grant Thornton, Enterprise, or McIntyre Marketing who had received my cheque first)?

Catherine Stooss
Lausanne
Switzerland

As we understand it, under British law, secured creditors are the government, the inland revenue, and anyone else to whom the directors of the company have written a promissory note. Unsecured creditors are everybody else.

The receiver will firstly pay all the secured creditors and then divide the remainder (if there is any)

between the unsecured creditors.

It may turn out that there is no money left to repay you as an unsecured creditor, and unfortunately there is nothing you can do about it.

Our best advice is to keep in touch with Grant Thornton and await developments. Good luck.

CPC requested again

I was disappointed when my letter, concerning the headings used for Amstrad listings, was published (July 3), for two reasons.

Firstly, you gave my address as Portsmouth, and secondly you seem to have missed the point of my letter entirely.

If a complete novice sees the word "Amstrad" at the top of a listing, how is he/she to know that this program will not run on a PCW machine?

Can we please see "CPC models" in brackets on all appropriate headings in future?

Alan Baker
Bournemouth
(near Portsmouth)

Now that PCW listings are growing in number, rather than being the exception, we take your point, Alan. All Amstrad listings will now state which Amstrad computer they are written for.

Xxxx

There are a few clarifications needed about my Spectrum program, UXB, in order to get it to work properly. On the following lines of code all the characters inside quotation marks should be entered in Graphics mode, ie, "AB" being graphics A and B, and "CS3" being graphics Caps Shift 3.

The lines are 310, 2000, 2010, 3000, 5005, 5010, 6020, 6050, 6090, 7600, 9030.

Ian Grainger
Co Durham

Exbasic explained

I am writing concerning Peter Worlock's review of *Exbasic* (Popular, July 31). We

at Locomotive Software take great exception to his rather dismissive throwaway opening remarks about Mallard Basic.

We would agree that Mallard Basic is not a toy with which to write zappy games, but after all that's not the market to which PCW computers sell. Mallard offers a very fast superset of the industry standard Basic, compatible across a wide range of micros and operating systems, with file handling far exceeding the capabilities of other Basics. So, rather than just "piddling little business programs", Mallard Basic with Jetsam keyfile handling is suitable for whopping great business suites!

For those who do want to use graphics, GSX is bundled on the PCW. We can supply an information sheet explaining how to use GSX from Mallard, and can supply suitable routines (and enhanced GSX drivers) on disc. (For the information sheet we just ask for a stamped, self addressed envelope, for the disc £6.95.)

Finally, speed. Mallard is fast, very fast. I was surprised to see the review suggested the use of CBasic, since when another magazine ran a comparison of Mallard to CBasic, Mallard came out many times faster.

Howard Fisher
Director of Marketing
Locomotive Software
Dorking
Surrey

Monitor data offer

If any readers don't feel like typing in the 12k of data in my Monitor program for the Commodore 64 then they can get a copy from me for £2 (tape) or £2.50 (disc), with the disc version having a number of extras. Send cheques/P.O.'s, made payable to Mrs M Baker, at 22 North Road, Kinloss, Forres, Morayshire, IV36 0YB.

Mrs M Baker

Ziggurat feedback

I was interested in the Ziggurat, July 31, by Marcus Rowland, entitled "What happened to vector graphics?", but would like to

point out one omission.

Whereas the vector machine will better drive a plotter, and the plotter output with straight angled lines and smooth curves may look better, it is not necessarily more accurate. In fact it really does need a scale to be added to the drawing to maintain any sort of accuracy, whereas the dot matrix drawing produced by a raster machine is self-scaled by the dot spacing, and the paper may shrink or be stretched without altering accuracy (so long as you can actually see the dots).

Our 64 Drawing Board program for the Commodore 64/128 capitalises on this fact, though to maintain a one-to-one relationship between screen and print-out we are restricted to using 40 columns on the screen (but not on the whole drawing) and the printer should have a "square" matrix; that is, one with equal density of dots per inch both horizontally and vertically.

Most Epson-compatible printers have this capability (at 72 dpi) but not, surprisingly, the early Epsoms like the MX80. They can be used, but give a 20% change in aspect ratio, which causes a visual distortion of scale but not, I reassert, a loss of accuracy.

Rather than a revival of vector displays, what I would like to see is higher density dot matrix printers still with a square matrix.

DAG Tait
Culton Sales and Services Ltd
Dorking
Surrey



NOBLES COMPUTER REPAIRS

- * Repairs carried out by our own engineers
 - * All repairs carry a 4-MONTH GUARANTEE
- For estimates phone or send your computer to NOBLES
- Spectrum Plus..... **£16.95** inc parts
post and pack
- Commodore 64/Vic 20 from **£9.95** plus
parts
- Amstrad from **£18.95** plus
parts

Also repair specialists for MSX computers

NO HIDDEN CHARGES

★ SPECIAL OFFER

5 FREE GAMES WORTH £25

with each Spectrum repair – Trade/School and Club discounts arranged

* For free, no obligation estimates phone or send your computer to **NOBLES** for the fastest, cheapest repairs in ESSEX.

NOBLES

14-17 Eastern Esplanade
Southend-on-Sea

Essex

0702 63377/8

63336/7/8/9

7 days a week, 24-hour Answering Service

100 NEW TITLES REQUIRED IN 1986

PROGRAMMERS REQUIRED

TO SEND YOUR BEST GAMES PROGRAM

TO OMEGA FOR IMMEDIATE
ASSESSMENT, OUTRIGHT
PURCHASE OR ROYALTY
ARRANGEMENTS FOR
ALL MACHINES



Omega Software

9 King's Yard Carpenter's Road

London E15 2HD

Tel. 01-985 6877

CRASH

BONK

SQUIRT

SHRIEK

ESCAPE

ME'S A GOOD BOY REALLY!

He's wicked. He's evil. Can he ever be stopped? Jack the Nipper plays the tricks and creates the havoc we all would have liked to have enjoyed. So why wait any longer.

JACK THE NIPPER...

FREE badge with every game!

OUT NOW ON AMSTRAD SPECTRUM 48K MSX

MSX £8.95 cassette
Spectrum 48K
£7.95 cassette

Amstrad
£8.95 cassette
£14.95 disk

Gremlin Graphics Software Ltd., Alpha House, 10 Carver Street, Sheffield S1 4FS. Tel: (0742) 753423. Telex No: 547274

Psi and Colossus 4 checkmate

Games come and go but chess goes on forever. And continuing the line this month are two releases for the Spectrum.

The first, *Colossus 4* from CDS, is merely the latest in a line of Colossus programs running on a range of machines. The second, *Psi Chess* from The Edge, is a program completely new to me.

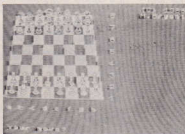
Colossus has rapidly established itself as the chess program for home computers. It may not be the strongest player (although it's one of the strongest), rather it's the number of features that set it apart from the competition.

The level at which *Colossus* plays (ie, the difficulty level) is almost infinitely changeable, while you can take back moves, ask *Colossus* for a hint, change sides in mid-game, or set up board positions and play from there. *Colossus* also has a number of special feature levels for solving chess problems, including self-mates and help-mates.

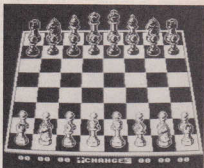
More to the point, most of these features are easy to implement. To take back a move, press *Shift-B*; to force *Colossus* to move, press the *Delete* key.

Finally, controlling the moves can be done algebraically (E2-E4), by joystick, or by cursor keys.

Sadly, the Spectrum ver-



Above: *Psi Chess* — "easier on the eye." Right: *Colossus 4* — "a particularly strong game."



sion lets the side down a bit. It plays as well, all the features are there, but the screen display leaves a lot to be desired. Certainly on our office TV it was very difficult to discern some of the pieces.

By comparison, *Psi Chess* looks great. The 3D display is large enough to be clear, although I still prefer a 2D display for actual play.

It also throws in an alternative chess set, the historic Isle of Lewis men. Unfortunately, this is nothing but a gimmick since the game is totally unplayable with these pieces.

In terms of features, *Psi Chess* runs *Colossus* close, with a large variety of levels, take-back on moves, and the ability to set up board positions. Sadly, it's let down by poor implementation. The feature controls are appalling-

ly conceived, requiring a double key-press to change mode, and then further key-presses to change features.

For example, to take back a move, you must press *f* to get into "Change" mode, then *M* and *3* simultaneously to get into "Set-up mode", then *Z* to take back the move, then *M* and *f* simultaneously to get back to "Play" mode.

What's worse is that very few of these commands are easy to remember, and it's all totally unnecessary.

And there are other faults. As far as I could determine, there's no way to force *Psi Chess* to play a move, which can lead to extremely boring sessions at the higher levels of play where the program can conceivably take up to an hour to play one move.

Deciding which of the two

to buy is difficult. If you have a dedicated monitor for your Spectrum, or if you want a particularly strong game, *Colossus* is the one to go for.

If you're a chess novice, *Psi Chess* is easier on the eye. But you'll have to put up with that awful command structure.

Peter Worlock

Program Colossus 4 Chess Micro Spectrum 48/128 **Price** £7.95 **Supplier** CDS Software, CDS House, Beckett Road, Doncaster DN2 4AD.

Program Psi Chess Micro Spectrum 48/128 **Price** £8 **Supplier** The Edge, 36-38 Southampton Street, Covent Garden, London WC2E 7HE.

Newspool to expand the Amstrad

Newspool is a CP/M utility designed to stretch the performance of your PCW, and in particular it is envisaged as working with the *Newword* word processor.

Once *Newspool* is loaded, it sits at the top of CP/M, not interfering with the running of your favourite programs unless the amount of memory they need is absolutely critical. *Newspool* also needs 16K free in the M drive to use as work space. If anything it is this latter requirement that may prove restrictive to users of the unexpanded PCW 8256 because some programs only just squeeze in.

"On the whole, Newspool is an invaluable aid and works like a dream with Newword word processor"

If you can find room, however, the spooler will work by intercepting everything that is to be sent to the printer at a very fast rate until the 16K buffer is full. If all the text fits into the buffer, control is returned almost immediately to your program allowing you to get on with other things and the spooler takes charge of

the printer.

It is not quite the same as background printing offered by say *Locoscript* because very long files will still cause you to wait around until there is only 16K left. Conversely you gain the advantage that several small documents can be queued up to be printed.

Some programs may have

to be re-installed to stop them waiting for a ready signal from the printer. You also have to be more careful about getting the printout correct because it is correspondingly more complicated to stop it and make changes, but, on the whole, *Newspool* is an invaluable aid and works like a dream with *Newword* word processor.

Tony Kendle

Program Newspool Micro Amstrad PCW 8256/8512 **Price** £12.95 **Supplier** Newstar Software, 200 North Service Road, Brentwood, Essex.

Polanski strikes back

Mirrorsoft's Art Director auditioned by Christina Erskine

With the Atari ST's graphics capabilities, it's not surprising that art packages are beginning to multiply. After *Neochrome* and *Degas*, Mirrorsoft is trying to outdo all predecessors with *Art Director*.

Art Director has been written by the Hungarian firm Andromeda – a different team, you may be relieved to hear, from that part of Andromeda which produced *Caesar the Cat*.

Its brief appears to have been to incorporate every known, and some unknown, graphics/art features into *Art Director* – and to attempt to keep the options simple to use and logical to find.

Thus the package has all the usual pen, brush, airbrush, filling, squares, rectangles, circles, ovals, zooming in on areas of the screen, etc, features that you would expect, plus a host of more sophisticated capabilities.

The nearest thing I've yet seen to *Art Director* is probably Electronic Arts' *Deluxe Paint* on the Amiga. *Art Director* has similar options to rotate your picture, or part of it, stretch it, enlarge or contract it, create a perspective viewpoint of it, change its colour palette, so that, for instance, Botticelli's *Venus* appears in shades of blue rather than brown, and text in a (small) number of different fonts can be added to the screen.

It should also go without saying that full printer dump facilities are in there, in a variety of sizes. You can also view your picture, before printing, in monochrome, to check how it will look in black and white if you don't have a colour printer.

Control of this bewildering array of options is mainly through the mouse, using icon-driven menus, and sub-menus, which appear as dialog boxes in the centre of the screen.

Direct icons control choice of brush width, colours within the brush, airbrush



option, line/picture deletion, fills, choice of text fonts for text insertion, and the colour palette settings.

"Art Director has options to change its colour palette so that Botticelli's Venus appears in shades of blue rather than brown"

A nice touch is the zoom window, which is permanently on screen showing the immediate drawing area around the cursor. The size of area shown can be scaled up or down by the scale icon next to it.

The sub-menus go into greater detail

about the exact settings you need for some functions – perspectives, 'bulging' pictures, extending and rotating, for example; the options to draw circles, rectangles, ovals, etc is also in a sub-menu.

Some keyboard commands are also incorporated, most obviously for writing text over or beside your pictures.

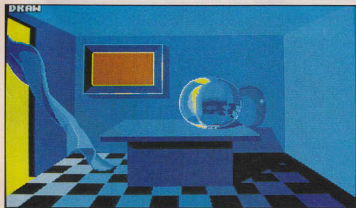
While there is no reason why *Art Director* shouldn't be used by a beginner or computer 'doodler', its capabilities give it a rather wider range of use.

Mirrorsoft itself has been using the program to design sprites for the Amstrad and BBC versions of *Strike Force Harrier*, and the company hopes to sell it to companies such as graphic design houses and storyboard writers.

For these uses, *Art Director*'s 'companion' package, *Film Director*, comes into the picture. To be sold separately, *Film Director* lets you take pictures from *Art Director* and fully animate them, then store on to video tape if you wish.

However, if you simply want a decent paint package to grow into rather than out of, Mirrorsoft has placed great emphasis on keeping the immediately accessible icons/menus to the simpler functions. How far this is possible will be seen when the final version is released. Within the package will be sets of demonstration pictures, and screens of ready drawn objects, which you can use, or modify in your own creations.

Both *Art Director* and *Film Director* will be demonstrated at the Personal Computer World show (open to the public from September 5-7). Mirrorsoft plans to release both products at the end of September, for the Atari ST only. Prices have been provisionally set at £49.95 for *Art Director* and £59.95 for *Film Director*. Mirrorsoft, Maxwell House, Worship Street, London EC2.



Roll up for the magical module voice

Chris Jenkins speaks up for a revived golden oldie

Launched around 18 months ago to overwhelming apathy from software houses and manufacturers alike, the Commodore Magic Voice

remains by far the best quality speech synthesiser available for the C64, and now it's available at a reasonable price.

Although only a couple of software packages were designed for it - *Gorf*, *Wizard of Wor*, and some educational games - the Magic Voice creates excellent clear speech using digital samples of real voices. It's limited to a preset vocabulary of 234 words (plus plurals), unlike some products which use an "allophone system" which allows you to construct any word, but at the expense of clarity.

Magic Voice's vocabulary includes numbers, letters, mathematical terms,

the speech. The voice is a fairly strongly-accented American female one, which pronounces "Z" as 'zee'. Concerned educationalists watch out. The unit can be used with a TV or a monitor.

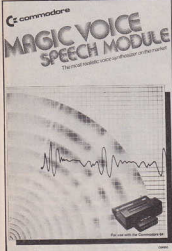
Magic Voice sacrifices a large vocabulary for much higher clarity than the allophone-based units such as Micro-speech, Sweet Talker or Superior's Speech. As such it's probably of more use for serious programming rather than

"Faculty Enterprises should be congratulated on this"

fun and games. There's no doubt though that the quality of the speech makes the competition seem even more like daleks gargling underwater, and at this price Faculty Enterprises should be congratulated on reviving this oldie but goodie.

Chris Jenkins

Product Magic Voice Speech Module
Micro Commodore 64 Price £16.99
Supplier Faculty Enterprises, 29 Rutland Court, Clarence Road, Ponders End, Enfield, Middlesex, EN3 4BJ, 01-805 8054.



Faculty Enterprises Magic

"The voice is a fairly strongly-accented American female one"

colours, computing terms and games phrases. It's housed in a cartridge of the same design as the newer FM Sound Module and Sound Sampler, and has built-in Rom software.

Magic Voice is programmed in Basic using the command *"Word"* and a *Rate* command to control the speed of

9.30am - AND PRODUCT DEVELOPMENT PRECIPITATES A MARKET POSITIONING CRISIS!

Strut, Whelk, Pozor, Souze
Do you prefer the French or American?

Sorry lads, but we'll have to drop the 'Souze' from flash from Mosiac's THE SNOW QUEEN packaging. They're launching an Amstrad version in August.

Dominic

SWIFTLY, THE PRODUCT'S STRENGTHS ARE ANALYSED BY HIGHLY-PAID EXPERTS

Independent and personal...
The available strengths...
The product has a strong appeal to more sophisticated, upwardly mobile ARGLs, health-conscious and body-aware, probably computer-owners with above-average aspirational values.

TARGET CONSUMER DEMOGRAPHICS ARE IDENTIFIED

LUNCH IS BOOKED AT THE POZEUR ASSOIFFE

AND BY NOON AN INSISTENT NEW SHELF PRESENCE HAS BEEN VISUALISED...

THE SNOW QUEEN

CONTAINS NO ARTIFICIAL SWEETENERS
The all-natural adventure for Commodore, Spectrum and now Amstrad!



IT'S BEEN ANOTHER LONG DAY



BUT THEY'LL BE BACK AFTER THESE MESSAGES...



THE SNOW QUEEN
An unusually intriguing illustrated text adventure from St Bride's

Amstrad, Commodore, Spectrum, Cassette £9.95

AND COMING SOONLY...

TWICE SHY Run like a action adventure based on the Old French Brider. Available Autumn

THE GROWING PAINS OF ADRIAN MOLE Lewis's follow-up to last year's highly successful SECRET DIARY Available Autumn

THE ARCHERS Radio 4's everyday story on screens at last. Starts in June? Available Autumn



MOSEIC PUBLISHING

Copyrighted by Mosaic Publishing, 20 John's House, Red Street, Leicester LE1 6BB (0533) 851 000. Available nationwide from stores where quality counts first and cost, see the list above. Also Super also covers the Spectrum case.

CASH-IN ON YOUR TALENT

Richard Darling

Richard and David Darling – top selling games writers, Programmers of the Year

David Darling

1984, USA Award winners 1985, over 1.5 MILLION games sold to date, including their latest hits – Last V8 and Master of Magic... are now expanding their operation and marketing games through their own label.

"We will pay £2500 advance royalties for high quality original games."

We are programmers – we know what makes a good, top selling game. If you can write good games, or conversions, we can help you make some real money. We can give any programming assistance you might need and supply music, graphics etc.

If you want to cash in on your talent, contact us now."

DIGITAL

Digital Computers Ltd., Unit 1,
Beaumont Business Centre,
Beaumont Close, Banbury, Oxon. OX16 7RT
Tel: 0295 68426 Fax: 0295 58770

MACSOFT DISCOUNT CLUB

48K SPECTRUM	
Molecule Man	£1.85
Video Olympics	£1.85
Lap of the Gods	£1.85
Octagon Squid	£1.75
Incredible Shrinking Fireman	£1.85
Master of Magic	£2.50
Conquest	£2.50
Back to School	£4.50
Ninja Master	£1.65
Splat! Hareid	£1.75
Green Beret	£3.90
Rambo	£5.70
Batman	£3.70
V	£5.70
Sky Fox	£5.75
The Master	£1.60
Mutant Monkey	£1.50
Spillline 42	£7.50
Legend of the Amazon Women	£5.70
Primary Arithmetic	£3.00

NO OBLIGATION

- Join the club by buying 4 of these titles at these special prices and including a small membership fee.
- Membership fee only £2 for one year.
- Your £2 back as credit if you buy 6 cassettes in the first 6 months of your membership.
- A selection of great titles at discount prices every month.
- Information each month to help you choose your software.

Send Cheque/P.O. to
MacSoft Discount Club
4 KELVIN VIEW
TORRANCE
GLASGOW G64 6HQ

Offer valid for 4 weeks
UK orders only. P&P Inc.

32P0801

ANCIENT & MODERN

Box 111 (Rear), Washington Road, West Wills Trading Estate, Westbury, Wilt.

SPECTRUM		COMMODORE 64		16 BIT		COMMODORE 128		780 A&N	
GHOST AND GORLINS	7.95	4.95	LEADER BOARD	6.50	8.99	MICROBALL			
KUNG FU MASTER	7.95	4.95	GHOST & GORLINS	8.90	N/A	SUPERHITS	6.95	4.90	
GREEN BEET	7.95	4.95	GREEN BEET	6.50	9.50	JET SET WILLY	7.95	4.95	
THE BOOGY	7.95	4.95	SECOND CITY	4.50	7.00	WIMBLEDON	7.95	4.90	
THE BOOGY	7.95	4.95	MERCURY	6.90	9.50	BOB'S TRILOGY	6.95	4.50	
GYRON	8.95	3.95	SLANT SERVICE	6.50	9.95	THE HULK	7.95	2.95	
MANTRONK	8.95	6.95	TIME TUNNEL	4.90	9.50	SPIDERMAN	7.95	2.95	
CALLIGRAPH	1.95	6.95	WATERBALL	4.90	9.95	COMMANDO	7.95	3.95	
WORLD CUP CARNAVAL	1.95	5.95	OTHER US GOLD	5.95	9.95	SPACE PILOT	6.50	4.95	
SCRABBLE	14.95	4.95	CALLIGRAPH II	8.25	N/A				
WIND DANCED WING	7.95	4.95	MAINGO	4.95	N/A				
ZODIAC	8.95	3.95	SPLIT PERSONALITIES	5.95	N/A				
READY ON THE MARCH	8.95	5.95	LITTLE COMP PEOPLE	5.95	9.95				
PRICE OF MAGIC	8.95	6.95	EDUCON	5.95	9.95				
ARC OF YOSKOD	7.95	2.95	GRAPHIC	ACN					
EVERYONE'S A WALLY	8.95	2.95	CREATOR	14.95	10.00				
HERBERT'S SUMMERY RUNS	9.95	2.95	LASER BASIC	8.95	9.95				
BATTLE OF THE PLANETS	9.95	5.95	LASER COMPILER	11.95	10.00				
KILLER TOMATOES	7.95	4.95	AMSTARD	5.95	9.95				
PLANETS	7.95	2.95	GREEN ROBOT	6.50	9.95				
FOURMIST	7.95	4.95	WORLD CUP CARNAVALS	5.50	9.95				
ADVENTURES	7.95	3.95	THE MUSIC SYSTEM	9.95	10.95				
NO GMA	7.95	3.95	SHOOT & GOBLIN	6.90	9.95				
BACK TO THE FUTURE	14.95	9.95	HOLD YOUR GRAW	10.95	10.95				
LASER DENIAL	14.95	9.95	WINTER SPORTS	6.90	9.95				
GRAPHIC ADV.	20.95	14.95	TAU CEE	6.90	9.95				

All prices Inc. Vat and P & P. Overseas please add 7% per tape. Thousands of titles in stock. Please send £4.95 for full list ending catalogue. Also available for MSX, Amstrad, Spectrum, etc. etc. Cheques/P.O. payable to Ancient and Modern, Box 111 (Rear), Washington Road, West Wills Trading Estate, Westbury, Wilt.

32P01002



Computer Games is a volatile business. You've got to make the right decisions and work with the right people to be a success. At CRL we've been doing that longer than most Companies have been in business. If you've got a program, you'll want the worldwide distribution we take for granted and the Software Development back-up we pride ourselves in. If you're a designer, a programmer or both, get in touch.



CRL Group Plc, CRL House, 9 Kings Yard, Carpenters Road, London E15 2HD Tel: 01-533 2918

BRILLIANT PROGRAMMERS

**Do you love to code?
Do you want to develop great games?**

We are looking for brilliant machine language programmers, who are good at coding games, have a working knowledge of all current computers, and are interested in an excellent remuneration package.

If:

- ★ YOU LOVE TO WRITE GAMES
- ★ YOU ARE A FAST CODER
- ★ YOU HAVE A GOOD WORKING KNOWLEDGE OF AT LEAST THE SPECTRUM AND COMMODORE 64 MACHINES
- ★ YOU KNOW WHAT IS NEEDED TO MAKE A GOOD GAME INTO A GREAT GAME
- ★ YOU KNOW HOW TO COMMUNICATE YOUR IDEAS TO OTHERS
- ★ YOU WANT TO GET AHEAD IN THE COMPUTER GAME INDUSTRY

then you must get in touch with us.

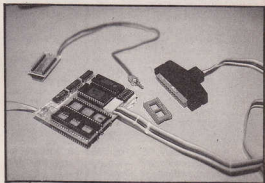
You will be working with the latest development systems, have excellent resources at your fingertips and you will be in charge of a team of 5 programmers.

The possibilities for advancement are almost unique. If you are a brilliant programmer with high ambitions, please ring Nilufer on 01-837.7714.

Faster than a speeding DolphinDOS

Chris Jenkins jumps in the deep end with his Commodore 64 to see how a Dolphin measures up

"DolphinDOS's speed is impressive, claiming to load a 202 block program in five seconds, up to 25 times faster than normal, saving in ten seconds; loading sequential files at 10 times normal speed, and saving at eight times normal speed."



With all the emphasis being placed on the speed of the operating systems of machines like the Atari 520ST and the Commodore Amiga, owners of the more affordable Commodore 64 and 1541 disc drive might be left wondering if there is any way to improve the performance of their notoriously slow disc systems.

In the past, various plug-in cartridges like the Epyx Fastload and Quickdisk Plus have done a lot to improve the saving and loading times of the 1541/64 combination. The real difficulties, though, lie in the ROMs of the devices, and only a complete replacement will make a quantum improvement in the system speed. Enter DolphinDOS.

Fitting the system could be an intimidating task, since it involves opening up both the 64 and the 1541, removing chips (which may or may not be soldered into place depending on how old your machines are), drilling holes for switches and so on. Note that a very small number of early 1541s are unsuitable for DolphinDOS — you can check with the distributors if you're unsure. The system can, however, work with the C128.

So what can DolphinDOS do for you? The drive circuit board connects to the 64's user port rather than the serial port, which gives a clue to the secret of the improved operational speed; DolphinDOS is a parallel system, able to transmit information much faster than the normal Commodore serial system.

On powering up the 64 with the Dolphin switch in the on position, you can display a system check by pressing F8. There are four main sections; Ram, which is required for read and write operations, fast load/save, verify and parallel bus. The status report also shows how many tracks have been used on the current disc, and the current disc device number.

DolphinDOS is more than just a quick load/save system. It also includes many of the features of the many popular "programming cartridges". On speed alone, though, the system is impressive, claiming to load a 202 block program in five seconds, up to 25 times faster than normal, saving in ten seconds; loading sequential files at 10 times normal speed, and saving at eight times normal. DolphinDOS can also format and verify 35 or 40 tracks on a disc in less than 20 seconds.

Usefully, all the normal load, save, verify and other Commodore Dos commands can be used with their normal

DolphinDOS also includes a screen editor, using the control key in conjunction with letter keys to delete lines, jump the cursor to the top or bottom of the screen, hardcopy the screen to a printer, store text in a memory buffer, and so on. As if this wasn't enough, there's also a machine code monitor, a command to restore a Basic program after a New, and software to support a Centronics printer. A user port expansion card will be available from Evesham Micros to enable you to connect the printer up.

If the effort of fitting DolphinDOS doesn't deter you, the system offers huge advantages to disc users. Disadvantages are that DolphinDOS does not support any tape commands, so the system must be turned off to use a cassette deck; and that some protection techniques on commercial discs conflict with the fast loading system.

However, there are many ways to manipulate the DolphinDOS system short of turning it off, and Evesham's freeze frame device can be used to produce back-ups of memory resident programs which will all reload at increased speed.

Forthcoming versions of Freeze Frame will be able to make ever better use of DolphinDOS's increased operational speed. Also in the works are kernels to allow the 128 to operate in high speed mode, and a switching board to allow you to choose between the new and old kernels for the 128 in 64 mode.

At £69.95, serious 64 users will find DolphinDOS a very attractive enhancement to their micro systems.

"All you have to do to scratch a file is use @S: progname. Blissfully simple."

convoluted syntax. However, if you want to save time, DolphinDOS provides many abbreviations. Shift Run/Stop will perform a Load***, 8.1. Run function. The function keys are preprogrammed with various list, run, load, display directory, save and other functions, and the ampersand symbol is used to replace the tedious Open 15,8,15, Print 15 which is normally needed before transmitting disc commands. So, for instance, all you have to do to scratch a file is use @S:Progname. Blissfully simple.

There are also lots of new disc commands; a scratch lock to prevent you from accidentally deleting important files, a device number change, and a utility to fix the number of tracks on a disc to the normal 35, rather than the 40 which DolphinDOS is capable of reading and writing.

Product DolphinDOS Micro Commodore 64/128 **Price** £69.95 **Supplier** Evesham Micros, Bridge Street, Evesham, Worcs, WR11 4RY (0386 41989).

Steel yourself for this one

Ricky Steel, teen dream hero, possessed of a stainless character, comes from the home of Wally. An unlikely stable mate for the atrocious handyman, but when the world needs rescuing from the evil Dr Vardos and his androids, you could hardly leave the job to the Weekes, could you?

Ricky is lucky enough to own an auto, Nightwind (no jokes, please), which is several steps up from an Escort as it is built of hyper alloy and has twin firing machine guns. And the fluffy dice look pretty neat, too.

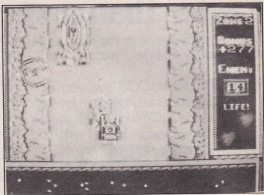
First though, Richard Steel (even more dynamic than his namesake, David), has to walk to his wheels, and that's no quick trip to the garagel. The skies are full of choppers

and the land's patrolled by robotic mines so he has to dodge and shoot on his long march up-screen.

Once in the driver's seat life is if anything worse as new menaces take over and Ricky has to drive around blasting everything in sight and avoiding rocks which will scratch his lovely paint-job. And as Nightwind can take to the wing, it's up, up and away for later screens.

Stainless Steel remind those with longer memories of *Spy Hunter*, which was also a charge-along-the-highway-shooting game, seen from a bird's eye view. What this has that *Spy Hunter* didn't are superior graphics, which while they are monochrome, are nicely shaded, and radar.

The whole of the M1 is



shown at the bottom of the screen, with blipping for every menace. As your range of direct vision is severely restricted to half a screen's height, you need this particular aid. Unfortunately, you could still use some warning on the main picture - I found I kept running into androids which came into view all too suddenly.

Maybe I'm a bad driver, but if *Mikro-Gen* had turned the whole screen on its side, I'd

have liked this more. It's certainly a fun shoot 'em up, but being a teen superhero isn't without its frustrations, either.

Popular Appeal ♦♦♦♦
John Minson

Program *Stainless Steel*
Micro Spectrum 48K
Price £9.95 Supplier
Mikro-Gen, Unit 15, Western Centre, Bracknell, Berks.

Open the Doors of Doom and Destiny

Call it fate, call it destiny, call it doom - as soon as I loaded *Doors of Doom (Plus)*, I knew exactly what to expect. A zany, whacky arcade adventure with three difficulty levels, featuring a hapless hero armed only with a laser gun, who has to defeat legions of rogue robots in order to find the missing sections of a weapons system which will allow him to assemble the three Doors, in order to pass the test which will allow humanity to become part of the galactic federation ... you get the idea?

Doors of Doom (Plus) is very colourful, accompanied by reasonable music, and has a fair degree of strategy and zapology involved. Each time you find a piece of the weapon system, you must find out how to use it, then face losing it when you teleport to the next level. Your task is to eliminate all the robots, keeping an eye on your energy level and picking up cups of tea to revive you.

All this would be perfectly hoopy, but the scrolling is

well jerky (as they say), and your little character seems quite happy to walk through the air in places, as well as on the various bridges, monoliths and girders of the background.

The game's main saving grace is the scenery designer, which allows you to edit the

background to your own taste. In fact, the instructions spend more time explaining this option than dealing with the game itself, giving some indication of how exciting the whole business is. *Doors of Doom (Plus)* - ? I'd hate to see *Doors of Doom (Minus)*.

Popular Appeal ♦♦♦♦
Chris Jenkins

Program *Doors of Doom (Plus)*
Micro Amstrad CPC 464/664/6128 Price
£9.95 Supplier Amsoft,
Brentwood House, 169 Kings Road, Brentwood, Essex.

Sitting on the Lap of the Gods

When Mastertronic get it right, they really get it right. Take *Lap of the Gods*, a brilliant variation on an old, old idea - the maze game.

You have to collect effigies, which you then trade in for special tools. Use the tools to gather the Crystals of ZZarn, which are hidden around the mazes, and you're really onto a winner, because a full house means the gods will teleport you back to your own time.

But the whole mission isn't that easy because the tunnels are haunted by Devil Incarnations which have one solitary intention - to stop you going home by stealing your

treasures.

If they touch you three times while you're carrying an effigy, you'll lose it, and just to make things worse, lose three of them and the gods themselves will get a bit marked and remove one of your lives, and one of those useful tools.

Nothing new, you say. Agreed. The gods themselves were young when this plot was hatched, but that doesn't matter when there are so many new twists.

Start with the graphics, which are amusing - in particular the effigies, which resemble rather grumpy heads. Then there's the gameplay,

which is wonderfully well judged. It's difficult, but not infuriatingly so. You'll need your best mapping skills, as your window onto the maze gives you a very restricted view, and a whole lot more, such as working out just what the gods' gifts can do for you.

Lap of the Gods is a well balanced budget title, so lap it up!

Popular Appeal ♦♦♦♦♦
John Minson

Program *Lap of the Gods*
Micro Spectrum 48K
Price £1.99 Supplier
Mastertronic, 8-10 Paul Street, London EC2.

Germany – 1985 style

If arcade games appeal to the hot-shot pilots in us all, then wargames appeal to the would-be generals among us. No need for acres of model terrain, thousands of tiny soldiers, hundreds of model tanks and troop carriers. Just you and your micro.

The latest from US Gold's Transatlantic Simulations label is *Germany 1985* – a product, perhaps, of the American paranoia of recent years (the game was written in 1983).

The scenario is a Soviet incursion into West Germany with either the player or the computer taking control of the attacking Soviet units, or the Nato defenders.

This is a "no nukes" game, so no matter how bad your situation you can't bail your self out of trouble that way – it's you against the computer with the forces available.

Each side has dozens of units to control – infantry,

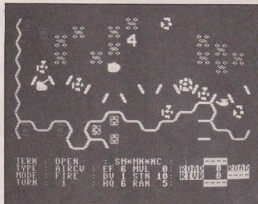
tank battalions, mobile artillery, and air cavalry on the Nato side, and mobile rocket launchers on the Soviet.

There are two game modules – "advance to combat", where many of the units are already in place; and "invasion" where Soviet paratroopers spearhead the assault from the East.

At first *Germany 1985* looks immensely confusing. The play area covers 12 screens, so keeping track of the game is difficult. And the instructions run to several pages of closely set type. However, you can allow the computer to move your forces for you, leaving you to command small numbers of units until you get the hang of things and take more and more responsibility.

Once you've played a few games like this, you'll find things much easier.

The screen display is colourful and clear, and a variety



Screen shot from US Gold's *Germany 1985*

of options allow easy scrolling around the war zone. Victory is determined not only by the number of casualties inflicted, but also by strategic questions such as control of towns and villages, so you'll also have to pay attention to tactical issues like controlling roads and bridges.

My only criticism of the US Gold package is that it omits an overall map of the game area, and a list of reinforcements. There were both part of the original Strategic Simulations Inc package and are referred to in the instructions.

You can play without them, but their omission is irritating.

Otherwise, *Germany 1985* is an excellent wargame, demonstrating SSI's continued pre-eminence in this market.

Popular appeal ♦♦♦♦
Peter Worlock

Program *Germany 1985*
Micro Commodore 64/128 **Price** £9.95 (tape) £14.95 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Vera Cruz: was it the butler?

An attractive young woman is found dead in her apartment. Next to her hand is a gun, on the table is a suicide note. An open and shut case? Maybe. But it's up to you, newly-appointed Detective Sergeant with the St Etienne police, to make sure.

L'Affaire Vera Cruz is the latest release from French software house Infogrames. *Vera Cruz* is the ex-person on the apartment floor and, as you might expect, things are not as they seem.

The game starts in the apartment. You can examine various objects in the room before heading back to the station where the real investigation begins.

Most of your work will be done at the terminal of the police Diamond Computer Network. Using this hot bit of technology you can contact

other police departments around the country, as well as prison authorities, to follow up the clues you find chez Cruz.

It's difficult to say too much without spoiling the game, but you'll find yourself involved with a very sordid bunch of thugs, murderers and jewel thieves.

Vera Cruz is similar to the first part of *The Fourth Protocol* in that you need to combine police intelligence networks with donkey work performed by your staff.

But *Vera Cruz* is a game of detection – you must assemble the evidence like pieces in a jigsaw and only when you have a perfect fit can you make an arrest.

It's a great game, and one that will have you wandering around mumbling "Who owns the BMW?" and "Who is the old soldier?"

Pop down to your software store and slap the cuffs on a copy.

Popular appeal ♦♦♦♦
Peter Worlock

Program *L'Affaire Vera Cruz* **Micro** Amstrad

CPC464 (Amstrad disc and Spectrum and Commodore versions to follow) **Price** £9.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex EN1 2RQ.





Jetsetting with Willy

Tony Kendle with the low-down on cheats

You know, I really did think that I had seen the last of miner Willy in this column but you can't keep an old sprite down. Andy Roberts of St Helens has written with an invaluable cheat routine for the new Tynesoft BBC conversion.

He writes, "This program is an excellent and very accurate conversion of the all time classic enjoyed by other micro owners. Anyway, the following program, when typed in and saved, will give you the following features: you can walk through any monster or killer object; you can fall any distance without dying; a screen transporter (the best of all).

"The transporter lets you jump, at any time, to any required screen. To use it simply press the Tab key and the computer will stop. You then have to type in a two figure number (from 02-60), corresponding to the required screen on the map, and, hey presto, you will find yourself on that screen."

"You will notice that I didn't say you can enter 01. On my (original) version of the game, screen 01 (the watch tower) crashes the computer as soon as you get

there" (it really is an accurate conversion). "If your version does work properly alter *CMP#2* in line 150 to *CMP#1* and the *LDA#2* in line 170 to *LDA#1* before using it.

"To use the program start loading the original as normal. When the first part (the title page) has loaded, stop the tape. When the 'searching' message reappears, press the *Escape* key and type **OPT1.0 <ret> and CH. * <ret>*. Then

"An excellent conversion of an all-time classic"

load the following program, which you have typed in and saved. You will notice that no tape loading messages will be displayed. When loaded, insert the original tape and continue as normal (but without messages). Good luck."

Many thanks for the letter Andy, and the map, but we've left the fun of working that out to the readers who should find it much easier and less frustrating with your pokes.

Charts

Top Twenty

- 1 (1) Speed King
- 2 (3) Thrust
- 3 (6) Ghosts and Goblins
- 4 (4) Ninja Master
- 5 (5) ACE
- 6 (2) Dragon's Lair
- 7 (7) Green Beret
- 8 (16) Video Olympics
- 9 (11) Kane
- 10 (9) Leaderboard
- 11 (12) Jack the Nipper
- 12 (13) Formula One Simulator
- 13 (8) Kick Start
- 14 (17) Kung Fu Master
- 15 (15) Spellbound
- 16 (10) Molecule Man
- 17 (-) Universal Hero
- 18 (20) Knight Games
- 19 (-) Yie Ar Kung Fu
- 20 (-) Skool Daze

Mastertronic
Firebird/Superior
Elite
Firebird
Cascade
Software Projects
Imagine
Mastertronic
Mastertronic
US Gold
Elite
Mastertronic
Mastertronic
US Gold
Mastertronic
Mastertronic
Mastertronic
English
Imagine
299 Classics

Figures compiled by Gallup/Microscope

Magical mystery tour

Tony Bridge offers help and advice with spells and magic for Red Moon and Magician's Ball, among others



Back in February of this year, Adam Milner sent me a short program to be used with Level 9 adventures *Red Moon* and *Return to Eden* in order to get a list of all the words used. As these things happen, there were a few little bugs in the listing. "It's been a long time, I know, but the corrections to make are these:

In line 10, there should be a space in *BIT* 1
Line 20 should read *FOR A=4800 to 4861* ... etc.

In line 30, the comma (,) before 65 should be a < (smaller than) sign
Line 60 should read *IF PEEK (A)>128* ... etc., and there should be a space between the quotation marks ("")

I hope these changes mean you'll be able to use the program properly. The full program can be seen in *Popular*, February 6.

As an example of what can be done, Adam mentions two words that he has gleaned from the list, and their effects. "If you meet an enemy, typing *Bury* will get rid of him forever. This also works for objects. And if you find the room with a line on the floor which you can't cross, then rub the cine and it will be gone."

Red Moon is one of my favourite Level 9 adventures; there are lots of places to be explored before the player has to start thinking hard, and with all the mysterious whispering voices, spells and so on. The whole story is very entertaining and also, it seems to me, gently pulling the leg of all those adventures that take location descriptions seriously (as in "webby junction", "stunningly fantastic chamber", "polished tunnel" and of course the various "crawls" as well as the obligatory "maze of tiny passages"). It is a large map, and much of it is easily discovered, but to reach all parts, you need not Heineken but to swim underwater.

What is required for underwater travel is the flask from the windy store room, the gas mask from the tiny door in the small neat room down the pothole, and the tubing.

Once you've sorted this out, you'll find a couple of interesting objects. One of these, the cloak, can be worn, and will

protect you from the unwelcome advances of the statue at the dark junction near the bone room. Incidentally, you'll also find a neatly-guarded chimney above the forge.

After killing the blacksmith, you must put out the fire using the fan and then prise open the grating with the crowbar, the other object from the flooded tunnel.

There are many objects to be found, and of course, you will not be able to carry them all, nor indeed, are they all useful. But if you read the cassette inlay, you'll notice that the escape spell will transport you, back to the start along with any possessions.

Deposit any treasure you wish to leave behind in the stone house and return to the mound (with the dulcimer!) and cast escape again when you will be returned to the original location. But the dulcimer (found in the castle) has another use: you could also try playing it.

Exploring, picking up objects and casting spells are not the only things to be done in this game; there is also plenty of fighting to be done. To combat the extremely dangerous and bloodthirsty creatures that you meet, you must make sure that you are equipped with the necessary armour (ring, shield and chain mail) and weapons (axe dagger sword and of course magic - or should I say *magik*?).

Don't forget that, like other *magik* in the game, the *Cast Zap* spell doesn't work if you're carrying iron weapons or armour. If you're wounded, use the potion from the hospital south of the straw-filled room. But as you will know,

the ghosts of the creatures slain by you may return for revenge (which is a good reason for not blasting away at everything you come across), in which case the best course open to you is to run after using the shield - valour is the better part of cowardice! (Incidentally Adam, in *Fantasia Diamond*, you'll need to lay the green book of music on the floor before the conductor will do his bit).

Magik, or even just plain old, common-or-garden magic, features in many adventures in one way or another, even though Level 9 makes it an art form.

The Magician's Ball, from Global Software, is another adventure making good use of spell casting. Not nearly as complex as *Red Moon*, of course, but the graphics are very pretty and actually reflect the action much of the time. The hoops can be used for travel, although it can become a rather complicated procedure.

First, you must become Azul, drink the ale until you can talk to the tree (I like this part, very true-to-life!), then get the tree, Azul and Caro to the place where the demon was, near the start. Now, drop the hoop and tell the tree to enter the hoop and do the same. Then you can command the tree to kill the magician.

Next week, we'll deal with some more *magik*. Not in the scenario, perhaps, but rather in the way in which the whole adventure is presented, programmed and written. It is *Hitchhiker's Guide to the Galaxy* from Infocom, which despite much nit-picking from lesser software houses, retains my vote as the greatest adventure-writing company around.

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair - help is at hand.

Fill in the coupon, explaining your prob-

lem, send it to us, and a fellow adventurer may be able to help.

Remember - the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

Adventure Problem on (Micro)
Name
Address

Today's computer requirements special attention **...and we are**

Existing users - do you subscribe to MEMOPAD the official MEMOTECH users magazine? For details send SAE



- 64K Memotech Computer
- 3½" 1 meg Disk Drive
- 512k Silicon Disk • 80 col Colour Card • Disk Controller
- CPM Operating System
- Word Processor • Supercalc Spread Sheet • 6 Games.

FULLY GUARANTEED BY MCL
£279.95 + £6.95 P&P.
 RS232 Kit Available At **£27.95**
 Hi-RES Green Screen Monitors **£89.00**

Existing Users
Upgrade Your System To The Above Specification for £209.00.

This is the Official MCL Package and Totally Supported by Syntaxsoft

3" Disk Boxes

Excellent Quality With Lock
 To Hold 20 Disks **£13.95**
 To Hold 40 Disks **£19.95**

Amstrad External

3" Disk Drives **£99.00.**

5¼" Disk Cleaner Best Value Ever £9.95

Einstein Dust Covers £7.95

5¼" DS/DD High Quality

Disks £18.95

Fully Guaranteed

3½" Disk Cleaner No Liquids.

Use them Over and Over Again **£16.95**

The First Ever 3" Disk Cleaner

Don't Let Corruption Ruin Your Programs
 Use Them Over and Over Again

For Amstrad Einstein And All 3" Disk Drives **£16.95**

**ter enthusiasts
need very very
on...
re very special.**



**The new Tatung Einstein 256
illustrated here offers the
following features:-**

- RAM 256K ● Full colour monitor ● Single 3" disk drive ● Qwerty keyboard ● Cursor keys
- Latest graphic chip technology ● Free: 5 games and word processing software with purchase

**Syntaxsoft officially appointed
software writers of the Einstein
256 having just completed 6
months development work
have on offer a full
range of the following
services:-**

- Full Software and Hardware support ● The worlds leading software house for the Einstein 256 ● Wrote the 5 games in the give-away pack ● First software house to receive the new machine ● Already completed 6 months of software development ● Supply the serial number of

your new machine and get a free copy of the software catalogue

- Over 250 titles available – games and business packages
- "The Brain" magazine, specifically for Einstein users
- Total support package for the end users.

**Hotline (0282)
38596 5 lines**

- For all sales and technical enquiries
- "Bug removing"
- Programmers and software writers always available.

Coordinates

By I. S. Fisher

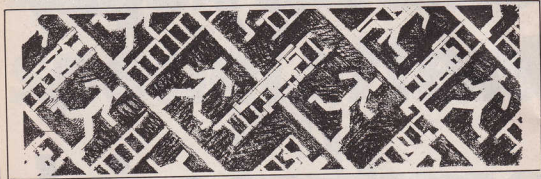
This program was written to aid the programmer in working out the coordinates for correctly positioning text and graphics.

To use the subroutine type *Coord* and the screen mode required will be re-

quested. Then, a window will appear containing information about the screen mode, current window and the three types of coordinates. Pressing keys 0 to 7 will change the current window being worked in. Then, pressing either C, A or G, representing text positioning by pixel, text by character squares and graphics respectively, will select the coordinate

system you wish to work with. If you choose C or A then you will be asked for the text to be positioned. Do so and you can position the text with the cursor keys.

Pressing Enter enables you to change window or choose another type of coordinate system. Pressing Escape exits the routine altogether.



```

10000 DEFINE PROCEDURE set_up
10001 current=1
10002 cx=0:cy=0:ax=0:ay=0:gx=0:gy=0
10003 INPUT#0,"Which mode (4/8) ":"m
10004 MODE m
10005 m=m/4
10006 OPEN#9,scr_PAPER#9,7:INK#9,0
10007 WINDOW#9,116*6,62,480-(116*m),154
10008 CLS#9
10009 PRINT#9," Window = #1 "
10010 PRINT#9," Mode = "m*4
10011 PRINT#9,"-----"
10012 PRINT#9,"Cursor - "
10013 PRINT#9,"Graphics - "
10014 PRINT#9,"At - "
10015 END DEFINE set_up
10016 DEFINE PROCEDURE COORD
10017 set_up
10018 REPEAT loop
10019 wind
10020 choice
10021 IF CODE(INKEY#)=27
10022 BEEP 1000,10
10023 EXIT loop
10024 END IF
10025 END REPEAT loop
10026 CLOSE#9
10027 END DEFINE COORD
10028 DEFINE PROCEDURE wind
10029 key=CODE(INKEY#)
10030 AT#9,0,14
10031 IF key<=55 AND key>=48
10032 PRINT#9:key-48
10033 current=key-48
10034 END IF

```

```

10035 END DEFINE
10036 DEFINE PROCEDURE choice
10037 key=CODE(INKEY#)
10038 SELECT ON key
10039 =99:BEEP 1000,10:curs
10040 =97:BEEP 1000,10:att
10041 =103:BEEP 1000,10:graph
10042 END SELECT
10043 END DEFINE
10044 DEFINE PROCEDURE curs
10045 INPUT#0,"Enter text ":"text#
10046 key=CODE(INKEY#)
10047 SELECT ON key
10048 =192:cx=cx-1
10049 =200:cx=cx+1
10050 =208:cy=cy-1
10051 =216:cy=cy+1
10052 =10:BEEP 1000,10
10053 GO TO 10063
10054 END SELECT
10055 OVER#current,-1
10056 FOR n=1 TO 2
10057 CURSOR#current,cx,cy
10058 PRINT#current,text#
10059 END FOR n
10060 AT#9,3,11:PRINT#9;" "
10061 AT#9,3,11:PRINT#9,cx;"",cy
10062 GO TO 10046
10063 OVER#current,0
10064 END DEFINE curs
10065 DEFINE PROCEDURE graph
10066 key=CODE(INKEY#)
10067 SELECT ON key
10068 =192:gx=gx-1
10069 =200:gx=gx+1

```

```

10070 =208:gy=gy+1
10071 =216:gy=gy-1
10072 =10:BEEP 1000,10
10073 GO TO 10083
10074 END SELECT
10075 OVER#current,-1
10076 FOR n=1 TO 2
10077 LINE gx-5,gy TO gx+5,gy
10078 LINE gx,gy-5 TO gx,gy+5
10079 END FOR n
10080 AT#9,4,11:PRINT#9;" "
10081 AT#9,4,11:PRINT#9,gx;"",gy
10082 GO TO 10066
10083 OVER#current,0
10084 END DEFINE graph
10085 DEFINE PROCEDURE att
10086 INPUT#0,"Enter text ":"text#
10087 key=CODE(INKEY#)
10088 SELECT ON key
10089 =192:ax=ax-1
10090 =200:ax=ax+1
10091 =208:ay=ay-1
10092 =216:ay=ay+1
10093 =10:BEEP 1000,10
10094 GO TO 10104
10095 END SELECT
10096 OVER#current,-1
10097 FOR n=1 TO 2
10098 AT#current,ay,ax
10099 PRINT text#
10100 END FOR n
10101 AT#9,5,11:PRINT#9;" "
10102 AT#9,5,11:PRINT#9:ay;"",ax
10103 GO TO 10087
10104 OVER#current,0
10105 END DEFINE att

```

Metronome

by Robert Keeble

This program for the BBC is a metronome simulation for those musicians who are metronomeless.

You are first asked for the number of beats per minute, upon the entry of which a metronome is displayed complete with the beat. Pressing escape enables you to enter a new beat per minute rate.

'Q' and 'S' turn the sound off and on respectively.



```

10 ONERRORLIN
20 CX=FALSE
30 AX=TRUE
40 DX=15
50 MODE1
60 PROCdisplay
70 PROCinput
80 VDU23,1,0;0;0;0;
90 PROCcalculate
100 PROCbase
110 END
120 DEFPROCdisplay
130 PROCbox
140 PRINT"
150 PRINT"
160 ENDPROC
170 DEFPROCinput

```

The Metronome"

```

180 INPUT TAB(0,2)"Beats per minute?"
bpm%
190 PRINT TAB(0,2)"Beats per minute="
bpm%"
200 ENDPROC
210 DEFPROCcalculate
220 stepX=60/bpm%*100
230 ENDPROC
240 DEFPROCbase
250 bX=TIME
260 IFINKEY(-82)DX=15
270 IFINKEY(-17)DX=0
280 IFTIME>bX+stepX THEN PROCanimate
290 IFCX THENCX=FALSE:GOTO250
300 GOTO 280
310 ENDPROC
320 DEFPROCanimate
330 IFAX GOLO,0:MOVE 600,200:DRAW 500
,800:GOLO,2:MOVE 600,200:DRAW 700,800
340 IFAX=FALSE GOLO,0:MOVE 600,200:DR
AW 700,800:GOLO,2:MOVE 600,200:DRAW 500
,800
350 SOUND 1,DX,5,1
360 IFAX THENAX=FALSE:ELSE AX=TRUE
370 CX=TRUE
380 ENDPROC
390 DEFPROCbox
400 GOLO 0,1
410 MOVE400,200
420 DRAW 800,200
430 DRAW 600,800
440 DRAW 400,200
450 PLOT 35,800,200
460 ENDPROC

```

Programming: Commodore 128

Queue Bert

by S Wightwick

The object of this joystick driven game is of course to paint each column of the pyramid whilst avoiding the green ball. The fire button is used to paint.

This program, which will be printed over two weeks, provides a basic Q*Bert game which can readily be built upon.



REM00.

```

100 PRG:GRAPHIC 1,1:HTM 1:ODM= 0"
101 CIRCLE 1,28:9,3,5,254,94,50:0
110 DRW 1,18,10,10,22,11:PRINT 1,20:0
111 DRW 0,18,7,10,19,7
120 DRW 0,21,7,10,22,7
121 DRW 0,19,9,10,21,9
130 CIRCLE 1,40,10,5:PRINT 1,40:18
131 CIRCLE 0,42,10,7,5,269,320
140 DRW 1,10,1,1000,OVX"
141 DRW 0,10,2,10,2,10
150 DRW 0,10,2,10,2,10
151 DRW 0,10,2,10,2,10
152 DRW 0,10,2,10,2,10
153 DRW 0,10,2,10,2,10
154 DRW 0,10,2,10,2,10
155 DRW 0,10,2,10,2,10
156 DRW 0,10,2,10,2,10
157 DRW 0,10,2,10,2,10
158 DRW 0,10,2,10,2,10
159 DRW 0,10,2,10,2,10
160 DRW 0,10,2,10,2,10
161 DRW 0,10,2,10,2,10
162 DRW 0,10,2,10,2,10
163 DRW 0,10,2,10,2,10
164 DRW 0,10,2,10,2,10
165 DRW 0,10,2,10,2,10
166 DRW 0,10,2,10,2,10
167 DRW 0,10,2,10,2,10
168 DRW 0,10,2,10,2,10
169 DRW 0,10,2,10,2,10
170 DRW 0,10,2,10,2,10
171 DRW 0,10,2,10,2,10
172 DRW 0,10,2,10,2,10
173 DRW 0,10,2,10,2,10
174 DRW 0,10,2,10,2,10
175 DRW 0,10,2,10,2,10
176 DRW 0,10,2,10,2,10
177 DRW 0,10,2,10,2,10
178 DRW 0,10,2,10,2,10
179 DRW 0,10,2,10,2,10
180 DRW 0,10,2,10,2,10
181 DRW 0,10,2,10,2,10
182 DRW 0,10,2,10,2,10
183 DRW 0,10,2,10,2,10
184 DRW 0,10,2,10,2,10
185 DRW 0,10,2,10,2,10
186 DRW 0,10,2,10,2,10
187 DRW 0,10,2,10,2,10
188 DRW 0,10,2,10,2,10
189 DRW 0,10,2,10,2,10
190 DRW 0,10,2,10,2,10
191 DRW 0,10,2,10,2,10
192 DRW 0,10,2,10,2,10
193 DRW 0,10,2,10,2,10
194 DRW 0,10,2,10,2,10
195 DRW 0,10,2,10,2,10
196 DRW 0,10,2,10,2,10
197 DRW 0,10,2,10,2,10
198 DRW 0,10,2,10,2,10
199 DRW 0,10,2,10,2,10
200 DRW 0,10,2,10,2,10
201 DRW 0,10,2,10,2,10
202 DRW 0,10,2,10,2,10
203 DRW 0,10,2,10,2,10
204 DRW 0,10,2,10,2,10
205 DRW 0,10,2,10,2,10
206 DRW 0,10,2,10,2,10
207 DRW 0,10,2,10,2,10
208 DRW 0,10,2,10,2,10
209 DRW 0,10,2,10,2,10
210 DRW 0,10,2,10,2,10
211 DRW 0,10,2,10,2,10
212 DRW 0,10,2,10,2,10
213 DRW 0,10,2,10,2,10
214 DRW 0,10,2,10,2,10
215 DRW 0,10,2,10,2,10
216 DRW 0,10,2,10,2,10
217 DRW 0,10,2,10,2,10
218 DRW 0,10,2,10,2,10
219 DRW 0,10,2,10,2,10
220 DRW 0,10,2,10,2,10
221 DRW 0,10,2,10,2,10
222 DRW 0,10,2,10,2,10
223 DRW 0,10,2,10,2,10
224 DRW 0,10,2,10,2,10
225 DRW 0,10,2,10,2,10
226 DRW 0,10,2,10,2,10
227 DRW 0,10,2,10,2,10
228 DRW 0,10,2,10,2,10
229 DRW 0,10,2,10,2,10
230 DRW 0,10,2,10,2,10
231 DRW 0,10,2,10,2,10
232 DRW 0,10,2,10,2,10
233 DRW 0,10,2,10,2,10
234 DRW 0,10,2,10,2,10
235 DRW 0,10,2,10,2,10
236 DRW 0,10,2,10,2,10
237 DRW 0,10,2,10,2,10
238 DRW 0,10,2,10,2,10
239 DRW 0,10,2,10,2,10
240 DRW 0,10,2,10,2,10
241 DRW 0,10,2,10,2,10
242 DRW 0,10,2,10,2,10
243 DRW 0,10,2,10,2,10
244 DRW 0,10,2,10,2,10
245 DRW 0,10,2,10,2,10
246 DRW 0,10,2,10,2,10
247 DRW 0,10,2,10,2,10
248 DRW 0,10,2,10,2,10
249 DRW 0,10,2,10,2,10
250 DRW 0,10,2,10,2,10
251 DRW 0,10,2,10,2,10
252 DRW 0,10,2,10,2,10
253 DRW 0,10,2,10,2,10
254 DRW 0,10,2,10,2,10
255 DRW 0,10,2,10,2,10
256 DRW 0,10,2,10,2,10
257 DRW 0,10,2,10,2,10
258 DRW 0,10,2,10,2,10
259 DRW 0,10,2,10,2,10
260 DRW 0,10,2,10,2,10
261 DRW 0,10,2,10,2,10
262 DRW 0,10,2,10,2,10
263 DRW 0,10,2,10,2,10
264 DRW 0,10,2,10,2,10
265 DRW 0,10,2,10,2,10
266 DRW 0,10,2,10,2,10
267 DRW 0,10,2,10,2,10
268 DRW 0,10,2,10,2,10
269 DRW 0,10,2,10,2,10
270 DRW 0,10,2,10,2,10
271 DRW 0,10,2,10,2,10
272 DRW 0,10,2,10,2,10
273 DRW 0,10,2,10,2,10
274 DRW 0,10,2,10,2,10
275 DRW 0,10,2,10,2,10
276 DRW 0,10,2,10,2,10
277 DRW 0,10,2,10,2,10
278 DRW 0,10,2,10,2,10
279 DRW 0,10,2,10,2,10
280 DRW 0,10,2,10,2,10
281 DRW 0,10,2,10,2,10
282 DRW 0,10,2,10,2,10
283 DRW 0,10,2,10,2,10
284 DRW 0,10,2,10,2,10
285 DRW 0,10,2,10,2,10
286 DRW 0,10,2,10,2,10
287 DRW 0,10,2,10,2,10
288 DRW 0,10,2,10,2,10
289 DRW 0,10,2,10,2,10
290 DRW 0,10,2,10,2,10
291 DRW 0,10,2,10,2,10
292 DRW 0,10,2,10,2,10
293 DRW 0,10,2,10,2,10
294 DRW 0,10,2,10,2,10
295 DRW 0,10,2,10,2,10
296 DRW 0,10,2,10,2,10
297 DRW 0,10,2,10,2,10
298 DRW 0,10,2,10,2,10
299 DRW 0,10,2,10,2,10
300 DRW 0,10,2,10,2,10
301 DRW 0,10,2,10,2,10
302 DRW 0,10,2,10,2,10
303 DRW 0,10,2,10,2,10
304 DRW 0,10,2,10,2,10
305 DRW 0,10,2,10,2,10
306 DRW 0,10,2,10,2,10
307 DRW 0,10,2,10,2,10
308 DRW 0,10,2,10,2,10
309 DRW 0,10,2,10,2,10
310 DRW 0,10,2,10,2,10
311 DRW 0,10,2,10,2,10
312 DRW 0,10,2,10,2,10
313 DRW 0,10,2,10,2,10
314 DRW 0,10,2,10,2,10
315 DRW 0,10,2,10,2,10
316 DRW 0,10,2,10,2,10
317 DRW 0,10,2,10,2,10
318 DRW 0,10,2,10,2,10
319 DRW 0,10,2,10,2,10
320 DRW 0,10,2,10,2,10
321 DRW 0,10,2,10,2,10
322 DRW 0,10,2,10,2,10
323 DRW 0,10,2,10,2,10
324 DRW 0,10,2,10,2,10
325 DRW 0,10,2,10,2,10
326 DRW 0,10,2,10,2,10
327 DRW 0,10,2,10,2,10
328 DRW 0,10,2,10,2,10
329 DRW 0,10,2,10,2,10
330 DRW 0,10,2,10,2,10
331 DRW 0,10,2,10,2,10
332 DRW 0,10,2,10,2,10
333 DRW 0,10,2,10,2,10
334 DRW 0,10,2,10,2,10
335 DRW 0,10,2,10,2,10
336 DRW 0,10,2,10,2,10
337 DRW 0,10,2,10,2,10
338 DRW 0,10,2,10,2,10
339 DRW 0,10,2,10,2,10
340 DRW 0,10,2,10,2,10
341 DRW 0,10,2,10,2,10
342 DRW 0,10,2,10,2,10
343 DRW 0,10,2,10,2,10
344 DRW 0,10,2,10,2,10
345 DRW 0,10,2,10,2,10
346 DRW 0,10,2,10,2,10
347 DRW 0,10,2,10,2,10
348 DRW 0,10,2,10,2,10
349 DRW 0,10,2,10,2,10
350 DRW 0,10,2,10,2,10
351 DRW 0,10,2,10,2,10
352 DRW 0,10,2,10,2,10
353 DRW 0,10,2,10,2,10
354 DRW 0,10,2,10,2,10
355 DRW 0,10,2,10,2,10
356 DRW 0,10,2,10,2,10
357 DRW 0,10,2,10,2,10
358 DRW 0,10,2,10,2,10
359 DRW 0,10,2,10,2,10
360 DRW 0,10,2,10,2,10
361 DRW 0,10,2,10,2,10
362 DRW 0,10,2,10,2,10
363 DRW 0,10,2,10,2,10
364 DRW 0,10,2,10,2,10
365 DRW 0,10,2,10,2,10
366 DRW 0,10,2,10,2,10
367 DRW 0,10,2,10,2,10
368 DRW 0,10,2,10,2,10
369 DRW 0,10,2,10,2,10
370 DRW 0,10,2,10,2,10
371 DRW 0,10,2,10,2,10
372 DRW 0,10,2,10,2,10
373 DRW 0,10,2,10,2,10
374 DRW 0,10,2,10,2,10
375 DRW 0,10,2,10,2,10
376 DRW 0,10,2,10,2,10
377 DRW 0,10,2,10,2,10
378 DRW 0,10,2,10,2,10
379 DRW 0,10,2,10,2,10
380 DRW 0,10,2,10,2,10
381 DRW 0,10,2,10,2,10
382 DRW 0,10,2,10,2,10
383 DRW 0,10,2,10,2,10
384 DRW 0,10,2,10,2,10
385 DRW 0,10,2,10,2,10
386 DRW 0,10,2,10,2,10
387 DRW 0,10,2,10,2,10
388 DRW 0,10,2,10,2,10
389 DRW 0,10,2,10,2,10
390 DRW 0,10,2,10,2,10
391 DRW 0,10,2,10,2,10
392 DRW 0,10,2,10,2,10
393 DRW 0,10,2,10,2,10
394 DRW 0,10,2,10,2,10
395 DRW 0,10,2,10,2,10
396 DRW 0,10,2,10,2,10
397 DRW 0,10,2,10,2,10
398 DRW 0,10,2,10,2,10
399 DRW 0,10,2,10,2,10
400 DRW 0,10,2,10,2,10
401 DRW 0,10,2,10,2,10
402 DRW 0,10,2,10,2,10
403 DRW 0,10,2,10,2,10
404 DRW 0,10,2,10,2,10
405 DRW 0,10,2,10,2,10
406 DRW 0,10,2,10,2,10
407 DRW 0,10,2,10,2,10
408 DRW 0,10,2,10,2,10
409 DRW 0,10,2,10,2,10
410 DRW 0,10,2,10,2,10
411 DRW 0,10,2,10,2,10
412 DRW 0,10,2,10,2,10
413 DRW 0,10,2,10,2,10
414 DRW 0,10,2,10,2,10
415 DRW 0,10,2,10,2,10
416 DRW 0,10,2,10,2,10
417 DRW 0,10,2,10,2,10
418 DRW 0,10,2,10,2,10
419 DRW 0,10,2,10,2,10
420 DRW 0,10,2,10,2,10
421 DRW 0,10,2,10,2,10
422 DRW 0,10,2,10,2,10
423 DRW 0,10,2,10,2,10
424 DRW 0,10,2,10,2,10
425 DRW 0,10,2,10,2,10
426 DRW 0,10,2,10,2,10
427 DRW 0,10,2,10,2,10
428 DRW 0,10,2,10,2,10
429 DRW 0,10,2,10,2,10
430 DRW 0,10,2,10,2,10
431 DRW 0,10,2,10,2,10
432 DRW 0,10,2,10,2,10
433 DRW 0,10,2,10,2,10
434 DRW 0,10,2,10,2,10
435 DRW 0,10,2,10,2,10
436 DRW 0,10,2,10,2,10
437 DRW 0,10,2,10,2,10
438 DRW 0,10,2,10,2,10
439 DRW 0,10,2,10,2,10
440 DRW 0,10,2,10,2,10
441 DRW 0,10,2,10,2,10
442 DRW 0,10,2,10,2,10
443 DRW 0,10,2,10,2,10
444 DRW 0,10,2,10,2,10
445 DRW 0,10,2,10,2,10
446 DRW 0,10,2,10,2,10
447 DRW 0,10,2,10,2,10
448 DRW 0,10,2,10,2,10
449 DRW 0,10,2,10,2,10
450 DRW 0,10,2,10,2,10
451 DRW 0,10,2,10,2,10
452 DRW 0,10,2,10,2,10
453 DRW 0,10,2,10,2,10
454 DRW 0,10,2,10,2,10
455 DRW 0,10,2,10,2,10
456 DRW 0,10,2,10,2,10
457 DRW 0,10,2,10,2,10
458 DRW 0,10,2,10,2,10
459 DRW 0,10,2,10,2,10
460 DRW 0,10,2,10,2,10
461 DRW 0,10,2,10,2,10
462 DRW 0,10,2,10,2,10
463 DRW 0,10,2,10,2,10
464 DRW 0,10,2,10,2,10
465 DRW 0,10,2,10,2,10
466 DRW 0,10,2,10,2,10
467 DRW 0,10,2,10,2,10
468 DRW 0,10,2,10,2,10
469 DRW 0,10,2,10,2,10
470 DRW 0,10,2,10,2,10
471 DRW 0,10,2,10,2,10
472 DRW 0,10,2,10,2,10
473 DRW 0,10,2,10,2,10
474 DRW 0,10,2,10,2,10
475 DRW 0,10,2,10,2,10
476 DRW 0,10,2,10,2,10
477 DRW 0,10,2,10,2,10
478 DRW 0,10,2,10,2,10
479 DRW 0,10,2,10,2,10
480 DRW 0,10,2,10,2,10
481 DRW 0,10,2,10,2,10
482 DRW 0,10,2,10,2,10
483 DRW 0,10,2,10,2,10
484 DRW 0,10,2,10,2,10
485 DRW 0,10,2,10,2,10
486 DRW 0,10,2,10,2,10
487 DRW 0,10,2,10,2,10
488 DRW 0,10,2,10,2,10
489 DRW 0,10,2,10,2,10
490 DRW 0,10,2,10,2,10
491 DRW 0,10,2,10,2,10
492 DRW 0,10,2,10,2,10
493 DRW 0,10,2,10,2,10
494 DRW 0,10,2,10,2,10
495 DRW 0,10,2,10,2,10
496 DRW 0,10,2,10,2,10
497 DRW 0,10,2,10,2,10
498 DRW 0,10,2,10,2,10
499 DRW 0,10,2,10,2,10
500 DRW 0,10,2,10,2,10
501 DRW 0,10,2,10,2,10
502 DRW 0,10,2,10,2,10
503 DRW 0,10,2,10,2,10
504 DRW 0,10,2,10,2,10
505 DRW 0,10,2,10,2,10
506 DRW 0,10,2,10,2,10
507 DRW 0,10,2,10,2,10
508 DRW 0,10,2,10,2,10
509 DRW 0,10,2,10,2,10
510 DRW 0,10,2,10,2,10
511 DRW 0,10,2,10,2,10
512 DRW 0,10,2,10,2,10
513 DRW 0,10,2,10,2,10
514 DRW 0,10,2,10,2,10
515 DRW 0,10,2,10,2,10
516 DRW 0,10,2,10,2,10
517 DRW 0,10,2,10,2,10
518 DRW 0,10,2,10,2,10
519 DRW 0,10,2,10,2,10
520 DRW 0,10,2,10,2,10
521 DRW 0,10,2,10,2,10
522 DRW 0,10,2,10,2,10
523 DRW 0,10,2,10,2,10
524 DRW 0,10,2,10,2,10
525 DRW 0,10,2,10,2,10
526 DRW 0,10,2,10,2,10
527 DRW 0,10,2,10,2,10
528 DRW 0,10,2,10,2,10
529 DRW 0,10,2,10,2,10
530 DRW 0,10,2,10,2,10
531 DRW 0,10,2,10,2,10
532 DRW 0,10,2,10,2,10
533 DRW 0,10,2,10,2,10
534 DRW 0,10,2,10,2,10
535 DRW 0,10,2,10,2,10
536 DRW 0,10,2,10,2,10
537 DRW 0,10,2,10,2,10
538 DRW 0,10,2,10,2,10
539 DRW 0,10,2,10,2,10
540 DRW 0,10,2,10,2,10
541 DRW 0,10,2,10,2,10
542 DRW 0,10,2,10,2,10
543 DRW 0,10,2,10,2,10
544 DRW 0,10,2,10,2,10
545 DRW 0,10,2,10,2,10
546 DRW 0,10,2,10,2,10
547 DRW 0,10,2,10,2,10
548 DRW 0,10,2,10,2,10
549 DRW 0,10,2,10,2,10
550 DRW 0,10,2,10,2,10
551 DRW 0,10,2,10,2,10
552 DRW 0,10,2,10,2,10
553 DRW 0,10,2,10,2,10
554 DRW 0,10,2,10,2,10
555 DRW 0,10,2,10,2,10
556 DRW 0,10,2,10,2,10
557 DRW 0,10,2,10,2,10
558 DRW 0,10,2,10,2,10
559 DRW 0,10,2,10,2,10
560 DRW 0,10,2,10,2,10
561 DRW 0,10,2,10,2,10
562 DRW 0,10,2,10,2,10
563 DRW 0,10,2,10,2,10
564 DRW 0,10,2,10,2,10
565 DRW 0,10,2,10,2,10
566 DRW 0,10,2,10,2,10
567 DRW 0,10,2,10,2,10
568 DRW 0,10,2,10,2,10
569 DRW 0,10,2,10,2,10
570 DRW 0,10,2,10,2,10
571 DRW 0,10,2,10,2,10
572 DRW 0,10,2,10,2,10
573 DRW 0,10,2,10,2,10
574 DRW 0,10,2,10,2,10
575 DRW 0,10,2,10,2,10
576 DRW 0,10,2,10,2,10
577 DRW 0,10,2,10,2,10
578 DRW 0,10,2,10,2,10
579 DRW 0,10,2,10,2,10
580 DRW 0,10,2,10,2,10
581 DRW 0,10,2,10,2,10
582 DRW 0,10,2,10,2,10
583 DRW 0,10,2,10,2,10
584 DRW 0,10,2,10,2,10
585 DRW 0,10,2,10,2,10
586 DRW 0,10,2,10,2,10
587 DRW 0,10,2,10,2,10
588 DRW 0,10,2,10,2,10
589 DRW 0,10,2,10,2,10
590 DRW 0,10,2,10,2,10
591 DRW 0,10,2,10,2,10
592 DRW 0,10,2,10,2,10
593 DRW 0,10,2,10,2,10
594 DRW 0,10,2,10,2,10
595 DRW 0,10,2,10,2,10
596 DRW 0,10,2,10,2,10
597 DRW 0,10,2,10,2,10
598 DRW 0,10,2,10,2,10
599 DRW 0,10,2,10,2,10
600 DRW 0,10,2,10,2,10
601 DRW 0,10,2,10,2,10
602 DRW 0,10,2,10,2,10
603 DRW 0,10,2,10,2,10
604 DRW 0,10,2,10,2,10
605 DRW 0,10,2,10,2,10
606 DRW 0,10,2,10,2,10
607 DRW 0,10,2,10,2,10
608 DRW 0,10,2,10,2,10
609 DRW 0,10,2,10,2,10
610 DRW 0,10,2,10,2,10
611 DRW 0,10,2,10,2,10
612 DRW 0,10,2,10,2,10
613 DRW 0,10,2,10,2,10
614 DRW 0,10,2,10,2,10
615 DRW 0,10,2,10,2,10
616 DRW 0,10,2,10,2,10
617 DRW 0,10,2,10,2,10
618 DRW 0,10,2,10,2,10
619 DRW 0,10,2,10,2,10
620 DRW 0,10,2,10,2,10
621 DRW 0,10,2,10,2,10
622 DRW 0,10,2,10,2,10
623 DRW 0,10,2,10,2,10
624 DRW 0,10,2,10,2,10
625 DRW 0,10,2,10,2,10
626 DRW 0,10,2,10,2,10
627 DRW 0,10,2,10,2,10
628 DRW 0,10,2,10,2,10
629 DRW 0,10,2,10,2,10
630 DRW 0,10,2,10,2,10
631 DRW 0,10,2,10,2,10
632 DRW 0,10,2,10,2,10
633 DRW 0,10,2,10,2,10
634 DRW 0,10,2,10,2,10
635 DRW 0,10,2,10,2,10
636 DRW 0,10,2,10,2,10
637 DRW 0,10,2,10,2,10
638 DRW 0,10,2,10,2,10
639 DRW 0,10,2,10,2,10
640 DRW 0,10,2,10,2,10
641 DRW 0,10,2,10,2,10
642 DRW 0,10,2,10,2,10
643 DRW 0,10,2,10,2,10
644 DRW 0,10,2,10,2,10
645 DRW 0,10,2,10,2,10
646 DRW 0,10,2,10,2,10
647 DRW 0,10,2,10,2,10
648 DRW 0,10,2,10,2,10
649 DRW 0,10,2,10,2,10
650 DRW 0,10,2,10,2,10
651 DRW 0,10,2,10,2,10
652 DRW 0,10,2,10,2,10
653 DRW 0,10,2,10,2,10
654 DRW 0,10,2,10,2,10
655 DRW 0,10,2,10,2,10
656 DRW 0,10,2,10,2,10
657 DRW 0,10,2,10,2,10
658 DRW 0,10,2,10,2,
```

Procedures

by Colin Speed

This basic extension gives the following commands for Spectrum



programmers.
***DEFPROCName** — defines the start of a named procedure.
***ENDPROC** — defines the end of the current procedure.
***PROCName** — executes the named procedure.

***REPEAT** — defines the start of a loop.
***UNTIL cond** — repeats the loop until the condition is met.
***PCLEAR** — clears both the procedure, stack and the repeat-until stack.
***PPOKEa,b** — pokes a 16 bit value 'b' into 'a' and 'a+1'.

***PAUSEx** — same as normal Pause instruction except it cannot be cut short by a key press.

To use any of the new commands the following line must be entered first, and also immediately after any Clear statements.

***DISABLE** — turns off the break key.
***ENABLE** — turns on the Break key.
***ONERROR:GOTOxx** — directs the program to line xx every time an error occurs.
***ERRORFF** — returns error handling to normal.

Poke Peek 23613+256*Peek23614,0: Poke Peek 23613+256* Peek 23614+1,250

Finally, if you don't want to type the listing in send £1.50 to Colin Speed, 104 Monmouth Road, Yeovil, Somerset BA21 5NW.

```
>
1 REM *****
2 REM *
3 REM * PROCEDURES *
4 REM *
5 REM * by C.Speed *
6 REM *
7 REM *****
8 REM :
10 CLEAR 63999: LET add=64000
20 FOR n=1 TO 43
30 READ a$,a: LET tot+=a
50 FOR f=1 TO LEN a$ STEP 2
60 LET x=16*(CODE a$(f)-48-7*(a$(f+1)*9)
*)+CODE a$(f+1)-48-7*(a$(f+1)*9)
70 POKE add,x
80 LET tot+=x: LET add+=1
90 NEXT f
100 IF tot>=a THEN PRINT "ERROR IN DAT
A - Line "int*10+190: BEEP .5,0: STOP
110 PRINT at 0,0,"Line "int*10+190;" OK"
120 NEXT n
130 PRINT "DATA OK"
140 SAVE "PROCEDURES"CODE 64e3,970
150 POKE PEEK 23613+256*PEEK 23614,0: P
OKE PEEK 23613+256*PEEK 23614+1,250
160 PRINT "Now you can try the new com
mands"
200 DATA "343A5CE0B2855FDCB017E2007210
0FAE5C3B712214CFD",2490
210 DATA "FD7E0F0C2808FE102904FE14200
BCB4628072100FAES",2156
220 DATA "C37D1BC4E28133A3AC32815C231
1425CEDA0ED0A0F12",2393
230 DATA "C30FACFD0313FD3600F2A595CCDA
7112100FAE5C3B412",2949
240 DATA "2A5D5C287E2A20A2D01D1FA0DC
B007E20982A5D5CE5",2789
```

```
250 DATA "D04600FCBEFD02300BE002013E71
0F4FD3600FFFD3636",3072
260 DATA "01E1D06E01D06602E9480600D06D0
D230D23E1225D5C18",2403
270 DATA "C7FE0D280BFD36000BFE3AE1C207F
AE5F13600FFFD36B01",3071
280 DATA "7EC0E12100FAE521B712E5C3761B2
100FAE5FD3600FFC3",3127
290 DATA "761B0764656670726F6330FB07656
E6470726F6373FB04",2327
300 DATA "70726F639AFB0670636C65617260F
C0672657065617499",2626
310 DATA "FD05756E74696CC4FC0564706F6B6
520FD06656E61626C",2602
320 DATA "655AFD0764697361626C65AFF076
F6E5572726F7265FD",2643
330 DATA "066572726F6666A0FD0576175736
5ABFD080CBAFFEA138",2915
340 DATA "29FESB3025E7CBAFFEA413806FE5B3
00218F30FFD360006",2659
350 DATA "CD42FA2A78FC1178FC131347ED527
CB9C2C6FAFD360006",3204
360 DATA "C307FACDA2FA2A79FC1178FC1313A
7ED527CB9C2C6FAFD360006",3304
370 DATA "78FC2B282278FC11425C010300E
DB0C3C6FAFD360006",2839
380 DATA "DA60FBFESB0260FB0601E7CBAFFEA
13807FESB3030418",2913
390 DATA "20FFD360006FD7076CDA2FA2A535
C7FE280259FC2323",3136
400 DATA "C5E26237FE2A28031918ECES050
60711D1FA23131AE",2185
410 DATA "E6DFC253FC10F5E2A5D05CF46765
8160A07ED52D1131A",2393
420 DATA "AEE6FC253FC2310F3131AE00280
5FE3AC253FC2A78FC",3064
430 DATA "E52178FC11200019BE1A7ED52282
A21453CE5B78FCED",2867
```

```
440 DATA "A0ED07E3C121ED5378FC01E12B2
B2B2B7E32435C237E",2574
450 DATA "32425C3E0132445CC3C6FAD1E1FD3
60807C307FAD1E119",2783
460 DATA "C3C4FBFD360019C307FACDA2FA217
8FC117AF73237221",3136
470 DATA "00FD1102FD732372C3C6FA7FC000
0000000000000000",1806
480 DATA "0000000000000000000000000000
0000000000000000",367
490 DATA "FA2A0FD0120001100FDEB090100F
DA7ED52CBAACFCCE19",2584
500 DATA "21455CEDA0EDA07E3C1213E173237
2C3C6FACD821CDA2",3073
510 DATA "FA2A0FD01102FAD7ED52CAF9CCDD
5210812A7200F2A00",2799
520 DATA "FD11445C28010300EDB8C3C6FA2A0
0FD2B2822200FDC3",2447
530 DATA "CBAFFD360000C307FA02FD0000000
0000000000000000",1462
540 DATA "000000000000000000000000000000
0000000000000000",811
550 DATA "007EAC07FACDA2FACDA22D3813201
1C5CDA22D01380A20",2654
560 DATA "08C5E1732372C3C6FAFD36000AC30
7FA0000000CDA2FA21",2756
570 DATA "4CFD0C6C3C6FAFD36000AC307FA0
6C3C6FAFD36000B0F",3873
580 DATA "FE3AC207FAE7FEEDC207FAE7FD360
0FFCD821CFD0B07E",3673
590 DATA "CA07FACDA2FACDA22D0A49FDC245F
D214CFD0CBE237123",3498
600 DATA "70FD3600FFC3C6FAFD36000AC307
B8E3C3C6FAFD36000",3900
610 DATA "CB07EAC07FACDA2FACDA22D0ADEF
C2EDFC78B1C4C6FA",4154
620 DATA "760B18F",400
```


Small print on the Amstrad CPC

by Alastair Scott

Type in the following program, save it then run it and correct any errors. You will now have two new commands added to Locomotive Basic.

Gcol, paper, pen will set the graphics paper and pen colours, which cannot be done directly on the CPC464.

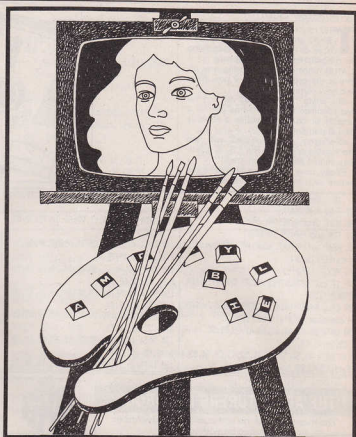
The other new command is *Print* which will print the specified text at graphics co-ordinates x,y in the current graphics colour, but in specially defined half width characters which double the number of columns available. The command should be used thus:

```
464 :a$="text"+Chr$(0):Print,x,y,a$
664/6128:Print,x,y,"text"+Chr$(0)
```

The utility was designed for use in Mode 0 but can be used in any mode if the following *Pokes* are implemented after every change.

Poke &9D5B,8 for Mode 1
Poke &9D5B,4 for Mode 2
Poke &9D5B,16 for Mode 0

Also note that this utility cannot be used with programs which utilise the *Memory* or *Symbol After* commands. In addition, any other machine code routines must be placed beneath Himem.



```
10 : Small Print
20 : by Alastair Scott
30 : MODE 1:CALL MBO(0:PRINT:PLEASE WAIT:PRINT
40 : SYMBOL AFTER 25:MEMORY MCF:SYMBOL AFTER 32
50 :RESTORE 470:cs=0
60 :FOR a=1000 TO 19043
70 :READ a:POKE a,VAL("0"+a):cs=cs+PEEK(a)
80 :NEXT
90 :IF cs<20536 THEN PRINT CHR$(7)"Error in 851 data":END
100 :CALL 19000
110 :RESTORE 230:cs=0:addr=M500
120 :FOR a=1 TO 96
130 :READ a
140 :FOR b=1 TO 8
150 :POKE addr,VAL("%*HID(a,b,1)+0")
160 :cs=cs+PEEK(addr):addr=addr+1
170 :NEXT b,a
180 :IF cs<79744 THEN PRINT CHR$(7)"Error in SYMBOL data":END
190 :MODE 0:IGCOL,3,14
200 :a$="IGCOL and IPRINT commands installed"+CHR$(0)
210 :IFPRINT,20,300,a$
220 :CALL 18616:MODE 1:END
230 :DATA 00000000,44444400,AAAA0000,00EE0000
240 :DATA 4C74E400,82222200,4E4E4E00,044E4400
250 :DATA 4B9B8B00,82222200,4E4E4E00,044E4400
260 :DATA 00004400,00EE0000,00004400,22448B00
270 :DATA 4444AA00,4C444E00,82222200,4E4E4E00
280 :DATA 8B4E2200,82222200,4E4E4E00,4E4E4E00
290 :DATA 4444AA00,4E4E4E00,04404400,44404400
300 :DATA 024B4200,00EE0000,0B424B00,4E4E4E00
```

```
310 :DATA 4A4E4E00,4A4E4E00,4C4C4C00,4B9B8B00
320 :DATA 0AAA4C00,4A4E4E00,4A4E4E00,4A4E4E00
330 :DATA 4A4E4E00,4A444400,82222200,0A4C4C00
340 :DATA 8B9B8B00,4E4A4A00,4A4E4E00,4A4A4A00
350 :DATA 4A4E4E00,4A4A4A00,4A4E4E00,4A4E4E00
360 :DATA 4A444400,4A444400,4A444400,4A4E4E00
370 :DATA 4A444400,4A444400,4A444400,4A4E4E00
380 :DATA 8B422200,82222200,4E4E4E00,00000000
390 :DATA 4A4B4B00,00EE4E00,8B4A4A00,00EE4E00
400 :DATA 22EE4A00,00EE4E00,00EE4E00,00EE4E00
410 :DATA 8B4A4A00,00EE4E00,00EE4E00,8B4A4A00
420 :DATA 00EE4E00,00EE4E00,00EE4E00,00EE4E00
430 :DATA 00EE4E00,00EE4E00,00EE4E00,00EE4E00
440 :DATA 4A444400,00AA4E00,00AA4400,00AA4E00
450 :DATA 00AA4A00,00AA4E00,00EE4E00,0A4C4C00
460 :DATA 44404400,8C4A4B00,8B4E0000,EEEEEEEE
470 :DATA 21,9F,9D,CB,7E,CB,FE,01,00,07,21
480 :DATA FF,95,11,FF,7E,7E,12,0B,23,13,79,B1
490 :DATA 20,7F,01,23,9D,21,40,9D,C3,01,8C,2B
500 :DATA 7D,C3,36,9D,9D,9D,53,50,32,4F,4E
510 :DATA 84,47,43,4F,CC,00,FE,03,00,7E,00,32
520 :DATA 36,87,3E,9D,32,87,0B,4E,00,20,46
530 :DATA 01,23,4E,23,46,CC,00,00,02,0B,46,03
540 :DATA 00,5E,04,00,5A,05,01,10,00,00,01,03
550 :DATA 05,05,CC,00,8B,E1,D1,C1,00,7E,00,FE
560 :DATA 00,2B,1E,C5,25,25,CC,FC,8B,E1,D1,C1
570 :DATA E3,05,E1,AF,ED,4A,E3,D1,E1,00,23,1B
580 :DATA DA,3E,00,32,36,87,3E,3E,37,87,C9
590 :DATA FE,02,00,0B,7E,00,CD,2E,8B,00,7E,02
600 :DATA C3,E4,8B,00,00,00,00,00,00,00,00,00
```

Programming: Amstrad CPC

by Alastair Scott

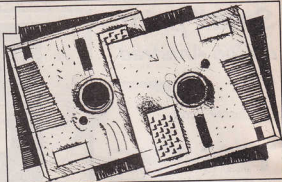
This routine will search through any Basic program and find any variable or text specified, displaying the program lines where it occurs.

After running and correcting any errors in the program you will now have two new commands.

a\$="string":Tsearch,@a\$ will find the text specified which could be part of a variable or contained within a Print or Rem statement.

a\$="string":Vsearch,@a\$ will find the variable specified. The I, \$, % specifiers should always be omitted.

Finally, note that you must press a key before each line number is revealed.



```
10 Search Routines
20 ' by A.M.Scott
30 MODE 2:cs=0:MEMORY %A0FF
40 FOR addr=&A100 TO &A207
50 READ byte$:POKE addr,VAL("&"+byte$):c
  s=cs+PEEK(addr)
60 NEXT
70 IF cs(>28792 THEN PRINT CHR$(7)"DATA
  ERROR!":END
80 CALL &A100:PRINT":TSEARCH and VSEARCH
  H commands initialised." :END
90 DATA 01,09,A1,21,20,A1,C3,D1,BC,11,A1,
  C3,24,A1,C3,29
100 DATA A1,56,53,45,41,52,43,C8,54,53,4
  5,41,52,43,C8,00
```

```
110 DATA 00,00,00,00,CD,2E,A1,18,18,CD,2
  E,A1,18,28,FE,01
120 DATA CD,00,66,01,DD,6E,00,7E,32,05,A
  2,23,4E,23,46,ED
130 DATA 43,03,A2,C9,3A,05,A2,5F,16,00,1
  B,2A,03,A2,19,7E
140 DATA C6,80,77,3A,05,A2,DD,21,70,01,D
  D,66,03,DD,6E,02
150 DATA DD,56,01,DD,5E,00,22,06,A2,7D,B
  4,C8,00,00,00,00
160 DATA 00,00,00,00,CD,82,A1,DD,05,E1,1
  B,19,23,ED,DD,E1
170 DATA 18,DD,DD,ED,E1,DD,ED,05,D1,0B,0
  B,0B,05,11,04
180 DATA 00,19,ED,5B,03,A2,C5,1A,BE,28,0
```

```
B,C1,0B,23,78,B1
190 DATA 20,F0,D1,DD,E1,C9,3A,05,A2,47,1
  A,BE,20,ED,23,13
200 DATA 10,F8,CD,B7,A1,18,EA,3E,00,CD,5
  A,BB,3E,0A,CD,5A
210 DATA BB,DD,ED,05,05,C5,2A,06,A2,CD,D
  5,A1,C1,D1,E1,DD
220 DATA E1,CD,06,BB,C9,11,10,27,CD,F0,A
  1,11,ED,03,CD,F0
230 DATA A1,11,64,00,CD,F0,A1,11,0A,00,C
  D,F0,A1,11,01,00
240 DATA AF,37,3F,ED,52,38,03,3C,18,F7,1
  9,C6,30,ED,CD,5A
250 DATA BB,E1,C9,00,00,00,00,00
```

"THE ADVENTURERS HANDBOOK"

The monthly book no self-confessed adventurer should be without.

"Stunning value" — Tony Bridge, PCW, issue 11 available now!

44 pages of adventure help and news for just £1

**FOR EVEN BETTER VALUE
TAKE ADVANTAGE OF OUR SUBSCRIPTION RATES**

3 issues for £2.75
6 issues for £5.00
12 issues for £9.00

Issues 1 to 10 are still available and cover hints, maps and solutions to over 175 adventures (issues 1-6 for £5, issues 7, 8, 9 and 10, £1 each).

ARCADE PLAYERS

If you enjoy arcade games why not take a look at our other handbooks — £1 each — back copies and subscriptions as for Adventurer.

Spectrum Arcade Handbook — issue 11
Commodore Arcade Handbook — issue 10
Amstrad Handbook (including adventures) — issue 10
BBC Handbook (including adventures) — issue 10
C16/Plus 4 Handbook (including adventures) — issue 4

Send cheque or PO to:

H&D SERVICES (PCW)
1338 Ashton Old Road
Higher Openshaw
Manchester M11 1JG
Tel: 061-370 5666

Once Bytten

31 BOWNESS ROAD
LONDON SE6 2DG

Phone Orders: 01-696 2911
(Callers by Appointment Only)

IT'S THE WAY WE SELL 'EM!

THAT MAKES OUR BYTTEN DISC THE BEST BUY. TOP QUALITY FLOPPIES FROM TOP FLIGHT MANUFACTURERS. 100% ERROR FREE — LIFETIME GUARANTEE AND NO HIDDEN EXTRAS... WHAT YOU SEE IS WHAT YOU PAY.

5 1/4" DS/DD 96pi (Suitable for all drives up to 80 tracks, single or double sided). All prices include envelopes — All discs have hub-rings. Price per disc...

1+ 10+ 25+ 50+ 100+ 500+ 1000+
80p 80p 65p 59p 55p 50p

5 1/4" DS/DD 96pi (Suitable for all drives up to 80 tracks, single or double sided). All prices include envelopes — All discs have hub-rings. Price per disc...

1+ 10+ 25+ 50+ 100+ 500+ 1000+
£1.05 95p 80p 76p 69p 65p 60p

3 1/2" DS/DD (Suitable for all drives, single sided). Price per disc...

1+ 10+ 25+ 50+ 100+ 500+ 1000+
£2.10 £1.85 £1.72 £1.67 £1.62 £1.55 £1.50

3 1/2" DS/DD (Suitable for all drives, single sided). Price per disc...

1+ 10+ 25+ 50+ 100+ 500+ 1000+
£2.75 £2.45 £2.35 £2.25 £2.10 £1.95 £1.85

DISC BOXES

5 1/4" 10 Capacity 1+ £1.50 10+ £1.25

5 1/4" 100 Capacity Locking 11+ £11.95

12+ £10.00

5 1/4" 10 Capacity 1+ £1.50 10+ £1.25

EXTRA ENVELOPES 5 1/4"

10+ 9p 50+ 8p 100+ 7p

500+ 6p 1000+ 5p

LABELS

5 1/4" Label Sets (for 10 discs)

inc. write-protects 1+ 35p 20+ 25p

3 1/2" Label Sets (for 10 discs)

1+ 25p 20+ 20p

IMPORTANT NOTE:— Any order including 10 or more discs is POST FREE, otherwise please add £1.00.

Cheques or Postal Orders payable to AMTEN LIMITED please Cash should only be sent by REGISTERED MAIL. You may pay by VISA or ACCESS card by mail or phone. HOTLINE FOR PHONE ORDERS 01-696 2911 290019

ALPHACOM 32 PRINTERS

High quality thermal printer for all Spectrums at a give-away price only £19.95 (p&p insurance £3.00)



Speedload

by Peter Selwyn

This Amstrad CPC routine enables you to save and load programs at a baud rate of 3600. Once you have removed any errors from your listing the machine code may be saved by entering `Save "filename.bin",B,&8000,&61`. Then, when ever you want to use the routine enter `Memory &7FFF:Load "filename.bin"&8000:Call &8000` to set the machine code up, and `Fast` to put the Amstrad into Speedload mode.

`Medium` sets the computer at 2000 baud while `Slow` is for 1000 baud.

```
460 MEMORY &7FFF
470 FOR addr=&8000 TO &8060
490 READ byte$:byte=VAL("&"+byte$)
500 POKE addr,byte
510 sumcheck=sumcheck+byte
520 NEXT addr
530 IF sumcheck<&2A60 THEN PRINT "Data
input error, please check typing":END
540 CALL &8000
550 REM
560 DATA 21,5C,80,CB,4E,C0,CB,CE
570 DATA 01,11,80,21,5D,80,CB,D1
```

```
580 DATA BC,25,80,C3,41,80,C3,41
590 DATA 80,C3,4A,80,C3,4A,80,C3
600 DATA 53,80,C3,53,80,73,6C,6F
610 DATA F7,53,4C,4F,D7,6D,65,64
620 DATA 69,75,ED,4D,45,44,49,55
630 DATA CD,66,61,73,F4,46,41,53
640 DATA D4,21,4D,01,3E,19,CD,68
650 DATA BC,C9,21,A7,00,3E,32,CD
660 DATA 68,BC,C9,21,5C,00,3E,05
670 DATA CD,68,BC,C9,00,00,00,00
680 DATA 00
```

High scores

by D Stewart

The following QL routine provides the facility to incorporate a high score table in your own programs. The first procedure is `High_table (n)` which initialises the table with room for 'n' entries.

The second procedure, `Insert_high_table (name$,score)` is used to insert a players name and score into the table at the appropriate position. The high score table itself can be displayed by using `Print_high$`.

A final note that all characters from array section (n,15) to (n,20) must be either a space or a digit else the program will crash.

```
30000 DEFINE PROCEDURE high_table (n)
30010 LOCAL a:entries=n
30020 DIM high$(n+1,20):FOR a=1 TO n:high$(a)=FILL$(" ",19)&"0"
30030 high$(a,1 TO 14)="Sinclair QL":NEXT a
30040 END DEFINE
30050 DEFINE PROCEDURE insert_high_table (name$,score)
30060 LOCAL n,m
30070 FOR n=1 TO entries
30080 IF high$(n,15 TO)< score THEN
30090 FOR m=entries TO n STEP -1:high$(m+1,1 TO)=high$(m,1 TO):NEXT m
30100 high$(n,1 TO)=name$:high$(n,21-LEN(score) TO)=score:END DEFINE
30110 END IF :NEXT n:END DEFINE
```

Transfer

by Endaff Bowen

This routine for the QL has two functions, both concerned with the screen display.

Suppose, for example, a Mode 8 picture was loaded into a Mode 0 screen then the true eight colours would be lost unless you typed `Scr_on 8` which would show the eight colours while the computer was still in Mode 0.

The second function, `Scr_off`, turns the display off, although commands can still be entered. `Scr_on mode` turns the display back on again.

```
#9000 DEFINE PROCEDURE SCR_ON (Screen_Mode)
9010 reg=16514
9020 IF Screen_Mode=0 OR Screen_Mode=8
9030 POKE_W 131072-reg,Screen_Mode
9040 RETURN
9050 END IF
9060 PRINT #0,"Wrong Mode. 0 or 8"
9070 STOP
9080 END DEFINE
9100 DEFINE PROCEDURE SCR_OFF
9110 reg=16514
9120 POKE_W 131072-reg,2
9130 END DEFINE
```

Programming: Peek & Poke



With Kenn Garroch

Basic Structuralism

A Benjamin Harrogate, North Yorks, writes:

Q I am interested in learning how to program in Basic but, with an eye to learning other programming languages in the future (Pascal, C, etc), I wonder if you could tell me the difference between the so-called structured Basics, and the others?

A Structuring in a programming language is the ability to break the program down into easily understood segments. To aid this, all Basics have the structures *If*, *Then* and *For...To...Next* (the former is not really a structure in most versions of Basic since it can only be on one line). The *If* is used to test a condition, such as *A=10*. If this is true, then the statements after the *Then* are executed, ie:

If condition *Then* statements to be executed if condition is true (all on the same line).

In most Basics, only the statements on the same line after the *Then* are executed, although some versions of the language do it properly, with:

If condition *Then*: section of code to be executed if the condition is true (as many lines as you like).

Else: Section of code to be executed if the condition is false (as many lines as you like).

EndIf: Rest of the program. The *For...To...Next* structure is common to all Basics, and most programming languages. A counter is defined

after the *For* command and incremented or decremented by a certain amount, every time the loop is executed. When the counter reaches the value given after the *To*, the loop executes until the *Next* and then exits to the rest of the program. If the counter has not reached the *To* value, the section of program with the loop is executed again, eg:

For T=1 To 10: section of code to be repeated 10 times,

Next T (note that in most Basics, the *T* is optional). When this loop ends, *T* will usually be equal to 11, although some Basics increment the counter at the beginning, not the end. The *Step* command can be used to make the loop count backwards, ie, from 10 to 1 - *Step -1* - or in different amounts (*Step 0.5*).

Other structures are available in some Basics, which include *While...Wend*, *Repeat...Until*, *Case*, procedures and functions.

Advanced Structuralism

T Sammers, of Redruth, Cornwall, writes:

Q In some of the books on programming I've read, there is reference to the term 'data structure'. Could you tell me what one of these is and how it works?

A data structure is a method used in high level computer languages for grouping information. The methods of defining and accessing the structures varies from language to language, but the idea is the same for them all. For example, if there is a program that needs to access a set of information about books, each book will have a title, author, price, publisher, ISBN number, and so on. These facts

are common to all books and so a data structure can be defined to hold them. Once defined (call the structure 'book'), an array of books can be set up. Since the format of the structure is the same for each book, it can be manipulated as a single object, so:

```
DEFStruct: book
Title: string
Author: string
Publisher: string
Price: Integer
ISBN: String
Quantity: Integer
EndStruct
```

This is a definition of the data structure for books. The array of books ('Library') could be set up with:

Library: Array (1..1000) of book

This would give access to 1000 different books. In the program, it is now quite possible to do things like:

Library(1)=Library(10)

which will put the information for book 10 into book one. Getting at the information of the book itself is done by the dot command:

```
for t=1 to 10
print Library(t).Title
next
```

This would print the first ten titles. This method of structuring data is very useful for setting up information in such a way that the program is easy to understand (which is very important with a long complex program, when you need to alter it after a year or so).

Garbage Collection

M. Brumpton of Clapham, London, writes:

Q I have an Amstrad CPC 464, and I have written a program that prints out statements of accounts for various firms. In this pro-

gram I have stored 12K of variables: *Name\$(200)*, *Addr1\$(200)*, *Addr2\$(200)*, *Addr3\$(200)*, *Addr4\$(200)*, where *Name\$(i)* are the names, and *Addr\$(i)* are the addresses, etc.

My problem is that when I come to save this file of addresses, after the computer encounters an 'Openout "Data"', there is a wait of one or two minutes before the computer responds with *Press Play and Record* then any key, and another wait, just as long, when it finishes saving.

There is also a wait when any command referring to the tape deck is made, such as *Cat* and sometimes the operation of the program stops for a time. I have tried forcing a garbage collection (whatever this is) by using *Print Free()*, but it does not seem to help. The waiting is most infuriating, could you please help me?

A I presume you are doing something like this:

```
10 DIMNAME$(200),ADDR1$(200),ADDR2$(200),ADDR3$(200),ADDR4$(200)
20 NAME$="AAAAAAA": ADDR1$="9999999999"
30 NAME$="CCCCCCCC": ADDR2$="5555555555"
40 NAME$="EEEEEEEE": ADDR3$="1111111111"
50 NAME$="FFFFFFFFFF": ADDR4$="2222222222"
60 PRINT "LAST BIT JUST FILL UP THE ARRAYS A LITTLE"
70 PRINT "DATA"
80 FOR T=1 TO 200
90 PRINT NAME$(T),ADDR1$(T),ADDR2$(T),ADDR3$(T),ADDR4$(T)
100 NEXT
```

I've tried this and the wait is only about two seconds. What the Amstrad does in those two seconds is to fill up its 2K data buffer with information to be saved. It is possible that if your program is very large, and/or you are doing a lot of string handling, the Amstrad may have to shuffle a few things around to make space for a buffer, though I think this is unlikely especially since you performed a *Free* making the computer do a garbage collection (free up any disused string space). Take another look at the way in which you are saving the data and try to shorten the program a little if it is very long.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem **Peek** it to Kenn Garroch and every week he will **Poke** back as many answers as he can. The address is **Peek & Poke, PCW, 12-13 Little Newport Street, London WC2R 3LD**

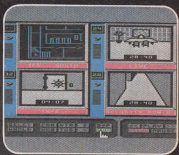
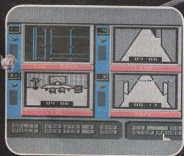
HACKERS!

U.S. GOVERNMENT NEEDS YOU!



HACKER II

The Doomsday Papers™



THE RUSSIANS HAVE A DOCUMENT KNOWN AS THE DOOMSDAY PAPERS
THE CIA NEEDS YOU TO STEAL IT

THE BUREAU WILL LET YOU HOOK-UP TO THEIR HIGH TECH HARDWARE
AND THEIR SATELITE SO YOU CAN DO THE JOB ON YOUR COMPUTER

THE PROBLEM THE LOCATION OF THE PLANS, THE GUARDS
THE SECURITY MONITOR OR SOMETHING CALLED.... THE ANNIHILATOR.

....HELP!....

ACTIVISION
HOME COMPUTER SOFTWARE™

For Commodore 64/128 cassette and disk, Sinclair ZX Spectrum cassette, Amstrad CPC cassette and disk, Atari ST, Commodore Amiga, IBM PC, PCjr, Apple II Series and

Apple Macintosh
Available from all SERIOUS Home Computer Software stockists!



Electronic mail services for the armchair letter-sender

David Wallin transmits the best

This week's column concentrates on the big four electronic mail services: Comet, One-to-One and MicroLink (in association with Telecom Gold).

In my opinion, MicroLink offers the most and the best features of all the services. I myself use the service mainly for electronic mail (within the UK), sending and receiving of telexes and sending telemessages. Although these are the main features (Telecom Gold was originally just an e-mail service), there are many others; you can order rail tickets, flowers and theatre tickets, get free telesoftware, have the spellings in your e-mail checked, download weather maps and many other things. There is not enough room here to detail MicroLink along with the other three services and we'll look at MicroLink in greater detail in the near future.

MicroLink is a closed user group (CUG) on Telecom Gold, run by Database Publications. (Similarly, Miconet is a CUG of Prestel). Telecom Gold can be joined by other methods, these include; directly from Telecom Gold, via Crown-Link (another CUG) and via the Tandy Computer Club.

Mailbox numbers are issued to you and have the characteristic format of xx:\$\$y. The xx refers to the system you are on (if you join via MicroLink then the system is 72). The \$\$\$ is three letters that will either be an abbreviation of your business/name or a mnemonic of the company via which you joined, i.e.: TCC: Member of the Tandy Computer Club; JNL: Signifies a Journalist; MAG: Joined via MicroLink; PCE: Pace Micro Electronics; TAN: Tandata Holdings.

Lastly, the yyy is a number from three to five digits long. There is a 'help' mailbox for MicroLink users, appropriately 72:MAG999.

MicroLink helps to make using Gold easier, by giving menus for the beginner. All mailboxes which start 72:MAG belong to MicroLink users, you have probably noticed, most Gold mailboxes seem to start 72:MAG.

My mailbox number on Telecom Gold is 72:MAG30190. If you are a member of Gold then when you write to me let me know your mailbox number so I can add it to a readers' directory I am setting up. Alternatively, leave me a message on Gold.

One-to-One was set up to directly compete with Telecom Gold and although it does not seem as popular (it has many less features, in some ways it is cheaper, although you might not think so to look at the chart below).

On all Gold services (MicroLink, Crown-Link, etc) you must pay to 'store' information or messages on the central computers disc. With One-to-One, this is free. The system has about 10,000 subscribers, all of whom may be e-mailed for free.

Telex facilities are available to reach the 1.75m Telex users world wide. Courier service enables you to have a message delivered anywhere in the UK in under two hours.

Registration is much higher than that of MicroLink, which probably puts off home users, but the system is still very good and definitely worth looking into, especially if you plan to store large

amounts of information on the central computer.

All of the services offer telex facilities (for MicroLink and Comet, an extra £10 is charged). Telexes may be sent to any of the 96,000 telex users in this country, any of the 1.5-1.75 million users worldwide and with MicroLink to any ships at sea (the other services may offer ship telex services, I'm not sure). Telexes may also be received.

With MicroLink, sending a telex is very simple, you just type *Telex (Return) Input (Return)* and type in the telex. I believe all the other services have easy to use telex facilities.

Receiving telexes is different and seems complicated but in fact it is simple. You may have seen written somewhere something like 'Telex: 265871 MONREF G Quoting Ref. 72:MAG30190' (this is my telex number).

	Comet	EasyLink	One-to-One	MicroLink
Send Telex	Yes	Yes	Yes	Yes
Receive Telex	Yes	Yes	Yes	Yes
Electronic Mail	Yes	Yes	Yes	Yes
Letters	No	No	Yes	No
Database	No	No	Yes	Yes
Radio Paging	No	No	Yes	Yes
Telemessages	Yes	No	No	Yes
International E-Mail	No	No	No	Yes
Translations	No	Yes	No	Yes
Courier Service	No	No	Yes	No
Teleshopping	No	No	No	Yes
Notice Board	No	No	Yes	Yes
Registration Fee	Free	£40	£50	£5 (telex + £10)
Mailbox Rental	£30/month	£12.95/month	Free	Free
	£40/month with telex			
Connect Charges	Free	10p/minute	10p/minute	11p/minute (peak) 3.5p/minute (off peak)
Telex:				
UK	7p/200 chrs. 22.5p/200 chrs.	25p/400 chrs.	10p/200 chrs.	5.5p/100 chrs.
Europe	50p/400 chrs.	50p/400 chrs.	20p/200 chrs.	11p/100 chrs.
USA	79p/400 chrs.	14.25p-18p/100 chrs.	35p/200 chrs.	18p/100 chrs.
Rest of World	£1.35/400 chrs.	£1.50/400 chrs.	65p/200 chrs.	£1.25/400 chrs.
E-Mail Charges	Free	15p each (first 50 free)	Free	Free
Minimum Invoice	£30/month	£12.95/month	£5/month	£3/month
	£40/month with telex			
Other Services			Dial-a-Gram	Rail Tickets Theatre Tickets CUGs Online Chat Spelling Checker Free Telesoftware Weather Information
Contact		01-633 9577	01-351 4268	061-456 8383

Other phone numbers that might be useful are: Telecom Gold: 01-403 6777, Crown-Link: 0323-647847, Prestel: Freephone 2296.

require programs for

**SPECTRUM, COMMODORE C16, PLUS4,
C64, C128, AMSTRAD CPC's, BBC,
ELECTRON, ATARI**

For evaluation send your programs or write to:

CENTRAL SOLUTIONS

**121 London Road
Knebworth
Herts SG3 6EW**



when you subscribe

to **POPULAR** Computing WEEKLY

Your choice of any one of the games listed below is free when you subscribe to **Popular Computing Weekly**

Please enter my annual subscription to **Popular Computing Weekly** at **£25.00 U.K. (£39.95 Overseas)**, and send my free game as marked below.

☐ Willow Pattern
☐ Chicken Chase

☐ Don't Panic
☐ Chimera

☐ Willow Pattern
☐ Chicken Chase

☐ Fat Man Sam
☐ Microcosm

☐ I enclose a cheque made payable to Sunshine Publications Ltd.

☐ Please charge my Visa/Access card No:

Expiry Date.....

Name: _____ Address: _____

Computers owned: Age:

Return this form together with your payment to: **PCW Subs**, 12-13 Little Newport St., London WC2H 7PP (Allow 28 days for delivery).

CLASSIFIED

Semi-display — £7 per single cc (+ VAT)
Lineage — 30p per word (+ VAT)

CALL RODNEY WOODLEY on 01-437 4343 FOR SEMI/DISPLAY ADVERTISING

FOR SALE

WE
UNDERCUT
EVERYBODY

A.B. Computers & Electronics Ltd

We are now official dealers for Commodore, NEC, Sage Business software and One on One Communications.
(Atari & Amstrad dealerships)

We supply the complete range of **HARDWARE** & **SOFTWARE** for the following...

- * ATARI (special deals on the ST range)
- AMSTRAD/SINCLAIR
- * ACORN/BBC
- * 10% of all Commodore Hardware
- * Other makes now available!

FOR BUSINESS...

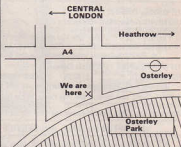
- * NEC/IBM PCs & compatibles
- * Upgrade cards up to 20M bytes
- * NEC printers & laser printers

FULL RANGE OF...

- * Printers (dot matrix & Daisywheels)
 - * Modems
 - * Disc drives (including Winchester)
 - * Monitors
 - * Software
 - * Sage software (Business range)
 - * 'One on One' mailboxes & telex systems
 - * Electronic Components & Interface Cards
- Export orders & enquiries welcome

AMIGA SYST 1
£300.00
OFF LIST PRICE

AMIGA SYST 2
£300.00
OFF LIST PRICE



A.B. Computers & Electronics Ltd
173 Thornbury Road,
Osterley, Isleworth,
Middlesex TW7 4QG.
Telex 946240
Tel: 01-568 7149

COMPUTER HIRE

TO HIRE A COMPUTER AND/OR PERIPHERALS BY THE WEEK OR MONTH
RING 01-607 0157 or 01-997 6457
WE SPECIALISE IN BBC AND ALSO HAVE A RANGE OF AMSTRAD COMPUTERS FOR HIRE

COMPUTER HIRE SERVICES
2544 CALEDONIAN ROAD
LONDON N1 1BA

ALADDIN'S PROFIT IMPROVEMENT PLAN QUICK CALCULATOR

1. ENTER your Annual Budget for Computer Printer
Faber Notebook (A) £ (B)
2. DIVIDE Amount (A) by Three and enter here £ (C)
3. SUBTRACT Amount (B) from Amount (A) and enter here £ (D)
4. Amount (C) is the approximate Personal Annual Profit Improvement available to your Company through using ALADDIN'S unique fabric ribbon in-feeding service.

QUOTATION PROCEDURE
Send a typed up fabric printer cassette from each type of printer used to your Company, enclosing Company Letterhead. Please label each cassette clearly with printer make and model.
Please quote reference: PC

ALADDIN, 4 Huxley Crescent, Epsom, Surrey, Surrey TW20 1AP. Telephone: Epsom 0329 549744 (extending to 988 037) 50365 (2)

20 CHARACTER SETS for Spectrum 48K on tape £3.00. Sigmasoft, 8 Pine Dale, Rainford, Merseyside WA11 8DP.

DISCS

AMSOFT	3" CF2	£29.90 per 10
AMSOFT	3" D200	£39.90 per 10
ATHANA	5.25" D200 40pp	£12.90 per 10
MAXELL	5.25" D200 40pp	£17.90 per 10
MAXELL	5.25" D200 80pp	£22.90 per 10
LVL	5.25" S200	£7.90 per 10
SONY D4440	3.5" D200	£16.90 per 10
AMSTRAD	PCW 2nd Drive	£125.00 each
AMSTRAD	CPC 2nd Drive	£80.00 each
AMSTRAD	CPC8128 Green	£242.82 each
AMSTRAD	PCW8256	£375.00 each
AMSTRAD	PCW8112	£475.00 each
CUMANA	800 C DRIVE	£127.80 each
40/80	CPC8256 UVACE	£27.95 each
AMSTRAD		Carriage inc. Please add 15% VAT (2)

RUGBY MICRO SPARES
30 OXFORD ST, RUGBY
CV21 3NF (0788) 71643
Callers welcome by App.

AMSTRAD CPC 6128 with colour monitor. Still under guarantee, boxed, instruction manual etc, hardly used
£329 o.n.o. Tel: 061-442 0832.

SUMMER SPECIALS

AMSTRAD PCW8256/8512

Hardware

RS232C/Comronics	£56.95
2nd Disk drive	£161.95
CF2 Disks	each £3.90
CF2 100 Disks	each £5.44
Printer ribbon	£5.60

Software

Map Integrated Accounts

CANIS/PT Integrated System

QUEST Trader & Analyser

IBASE II

Cracker 2

Microfilm/Microcard

Pocket Wordstar

Newsword 2 & Words

Prospice

Typing Tutora Touch 'N' Go & JANKEY

ON BASIC, DR PASCAL, DR DRAW, DR GRAPH

SINCLAIR QL

Super D Board 512K

512K Expander

Microdrives & disk

10.3" 100/00 disks

Prices include VAT & POSTAGE — THESE ARE JUST A SELECTION OF OUR SUMMER

BARGAINS — PHONE FOR FURTHER DETAILS

All products are offered subject to availability

PERIPHERY

117 GAINSBROUGH AVENUE,

OLDHAM OL9 5AJ

TEL: 061-626 5802

Dust Cover Set	£7.98
Disk and RAM	£179.95
10 CF2 Disks	£36.25
100 CF2 00 Disks	£58.00
2 Ribbons	£10.95
PHONE FOR LATEST LOW PRICES	
AVAILABLE SOON PHONE FOR DETAILS	
DELTA	£125.50
Scotchpad Plus	£128.45
IBASE II	£126.45
Cracker 2	£98.25
Microfilm/Microcard	£59.10
Pocket Wordstar	
Newsword 2 & Words	
Prospice	
Typing Tutora Touch 'N' Go & JANKEY	£21.80
ON BASIC, DR PASCAL, DR DRAW, DR GRAPH	£44.95

Super D Board 512K	£239.00
512K Expander	£115.00
Microdrives & disk	£7.00
10.3" 100/00 disks	£25.00

+ Dual 3 1/2" Drives	£444.00
Modulator	£36.80
3 packs for	£18.00

FOR SALE

CAREY ELECTRONICS

computing and communications

For AMSTRAD Word Processors & ACORN Master Series Computers & Peripherals

MASTER "128"	£499.00	Acorn 1770 DFS	£49.95
MASTER "TURBO"	£524.00	Acorn ADPS ROM	£29.99
MASTER "512"	P.O.A.	Acorn TURBO Co-Processor	£125.00
MASTER "SCIENTIFIC"	P.O.A.	A.T.P.L. "SIDEWIND" ROM Board	£43.70
MASTER "ET" Econet Terminal	£399.00	GRAFFPAD II	from £59.50
5502 Second Processor	£199.00	A.M.X. MOUSE	from £49.95
280 Second Processor	£399.00	MONITORS (14" R.G.B.) & (12" Mono)	from £129.00
Acorn "PRESTEL" Adapter	£139.00	Microvites	from £249.00
Acorn "TELETEXT" Adapter	£149.00	Philips CP1114 (monitor/TV)	£209.95
Acorn "IEEE 488" Interface	£325.00	Philips BM7502 (12" Green)	£87.95

We supply all ACORN and ACORN/SOFT products plus monitors, disk drives, printers, plotters, modems, light pens, AMX mouse.

The ACORN BBC "MASTER SERIES" - IN STOCK "Model B" taken in part exchange

Disk drives by: CUMANA, OPUS, PACE, U.F.D.

BABT approved MODEMS by: MIRACLE TECHNOLOGY, PACE, TANDATA

UFD Disk Drives:

UFD MD 400 A (Single D/S 400K with PSU)	£119.95
UFD MD 400 B (Single D/S 400K with PSU)	£139.95
UFD MD 802 E (Dual D/S 800K with PSU Stacked)	£274.95
UFD MD 802 D (Dual D/S 800K with PSU "MASTER" version)	£279.95

★ All drives include cables, formatting disk & instructions ★

UFD WINCHESTER Disk Drives:

HD 2000 (20MB)	£799.95	HD 4000 (40MB)	£1299.95
Including PSU, Winchester Controller Card and BBC Host Adapter Card			
ARCHIVE (10MB Tape Streamer and 1MB Floppy, for use with HD drives)	£999.95		
NUCLEUS 20 (20MB)	£1799.95	NUCLEUS 40 (40MB)	£2299.95

Also including 10MB Tape Streamer and 1MB 40/80 Track Floppy Disk Drive

It's AFTER the SALE, that SERVICE counts!!

Prices correct at time of publication and include V.A.T. at 15%

7 Church Road, Walton-on-Naze, Essex CO14 8DF

Tel: Frinton-on-Sea (02556) 6993 (9am to 9pm) (12)

YOUR PERSONAL CENTRONICS PRINTER

UNBEATABLE FROM £99
plus vat and £5 p.p.t.

- DRAFT DOT MATRIX
- NEAR LETTER QUALITY
- SUBSCRIPT SUPERScript
- CONDENSE EMPHASIZE
- 96 CHAR+48 EURO+16 MATHS
- EPSON/IBM GRAPHICS
- OPTIONAL TRACTOR

ROCK HALL LIMITED
128 STATION RD GLENFIELD
LEICESTER LE18 3BR
TEL: 0533 313531
TELEX: 341100

SPECIAL OFFERS!

- ★ Commodore DPS 1101, daisy/printers £119.99
- ★ Commodore 801 printers £99.99
- ★ Spectrum 48K £48.99
- ★ Spectrum 48K plus £79.99
- ★ Opus disk drives (single 40) £59.95
- ★ Opus disk drives (double 40) £119.95

Stock changes daily; variety of computers too massive to print

Computers wanted for cash or part exchange (2)

THERSBY COMPUTERS

26-28 Bowesfield Lane, Stockton,
Cleveland TS18 3ER
Tel: (0642) 604768

SERVICES

GATWICK COMPUTER SERVICES

62 THE BOULEVARD
CRAWLEY, SUSSEX
TEL: (0293) 37842

- ★ All makes of Amstrad software
- ★ Extensive range of offstock: database, accounts, and many games
- ★ 8256 disk & memory upgrades, complete with fitting by experienced engineers for £189.95
- ★ Repairs undertaken on all makes of computers & peripherals. (Most repairs done in one week & guaranteed for 3 months) (19)

OPEN 6 DAYS A WEEK 9.00-5.30

COMPUTER BROKEN

Have it repaired and working again at a fixed price. The price is inclusive of parts, labour, P+P, VAT and return postage.

SPECTRUM/PLUS	£16.95
OL	£34.95
AMSTRAD 464/664	£34.95
BBC (A OR B)	£29.95
ELECTRON	£34.95
COMMODORE 64 (NOT PSU)	£29.95
C64, VIC 20, PSU (EXCHANGE)	£29.95

Please send computer with cheque or postal order to:

MICRO-EMD

The Old School, Main Street, FARNET, Peterborough PE7 3QB.
Telephone: (0733) 241718 (20P10)

FOR SALE

BLANK CASSETTES

WITH LIBRARY CASES			
	C10	C15	C30
10	3.80	4.00	4.15
20	7.00	7.20	7.40
30	10.50	10.75	10.95
100	27.00	28.00	29.00

Fully Inclusive (COD 60p extra)
Superior Tapes. Don't Settle for Less!

DISKS

10 5 1/4 5DD CIB	£17
inc plastic case	
10 3 1/2 5DD C17	£17

MEMOTECH COMPUTERS AND ACCESSORIES

MTX 512 COMPUTER	£75.00
DMX 90 PRINTER	£150.00
PS232	£35.00
PASCAL ROM	£35.00
SPECULATOR ROM	£35.00
1 mb. DISK DRIVE & INTERFACE	£150.00
1 mb. DISK DRIVE & INTERFACE	£210.00

All the above prices are fully inclusive. We stock the entire Memotech range. Orders throughout the UK.

UK HOME COMPUTERS
31 CHORLTON ROAD, WILTS. SN2 1BB
24hr Phone Service 0745 89504 31P127

CPC 464 programs. 16K or less transferred to Epm, £7. Contact Ray Raemacul, 49 Ossington St., Notting Hill, London W2. Original software only.

WANTED for Acorn Atom, toolkit ROM preferably Disarm, but all others considered. Ring Barry Nolan (0282) 67418.

48K SPECTRUM with Dk'tronics keyboard, £45; P40 Epson printer with Interface £45; data recorder £12; Evenings Berkswell 34122.

ADVENTURES Spectrum 48K, Commodore 64 (quickload), "Hammer of Grimmold", "Lifeboat" £2.50 each. J. A. Lockery, 44 Hyde Place, Aylesham, Canterbury, Kent.

THE FIX gives C-Series quills five new actions: Parse, Wait, Add, Sub, Perform. (See adventure corner issue 27). £4.50 Kelsott (PCW), 28 Quoc Street, Stamford, Lincolnshire PE9 1QS.

AB COMPUTERS & ELECTRONICS

★CHEAP COMPUTER REPAIRS (From £12)★

BBC, AMSTRADS, COMMODORES etc

3 MONTHS WARRANTY GIVEN ON REPLACED PARTS

CALL US ON 01-568 7149
(we are next to Osterley Park on the A4) (1)

173 THORNBURY ROAD, OSTERLEY, ISLEWORTH, MIDDLESEX TW7 4QG.
Telex 946240. Telephone 01-568 7149

APPLE IIe, near new, 128K, twin Apple drives, Apple monitor, 80col card, Prodos, DOS33, joystick. Must sell. Bargain £700 o.n.o. Tel: 01-889 4230.

The 1st choice EXPRESS SPECTRUM, BBC and COMMODORE REPAIRS!

SOFTWARE
RRP £24.00 FREE WITH
EVERY REPAIR*

WHY PAY HIGH
"FIXED"
PRICES

Spectrum
repairs between
£14 and £20

BBC repairs
between
£14 and £15

Commodore
repairs between
£14 and £35

*Spectrum only

(We do not charge you for our
fancy premises by charging
high "fixed" prices)

Reputations take time to build.
We have been repairing ZX 81's,
Spectrum, QL3, Apples and
BBC's professionally, for 21½
years - who is coming second?

in all U.K. with While-U-Wait repair
with INTERNATIONAL repair service

to charge £100 PRICES for the smaller
repairs (e.g. £10 for keyboard fault)

FOR LOW PRICES - "My computer
has been repaired. I took it to MANCOMP,
who fixed it in 10 minutes and for less
than £10! They are fast, fixed up
and blindingly efficient!" a HEATINGS
DISCOST.

FOR PROFESSIONALISM - "Of all the
repair companies 'Sinclair User' spoke
to, MANCOMP seemed the most
PROFESSIONAL, offering to advise
and a helpful attitude" AUG 85

FOR HONESTY - "We let you watch
your computer being repaired and if
there is nothing wrong with it, we will
let you go!"

FOR REPUTATION & HELPFULNESS -
"I have come across a firm that will be
more than willing to advise you as to
how to remedy your problems. They
are called MANCOMP and as well as
repairing faulty computers, are also
quite willing to discuss your problems
with you and offer reasonably cheap
and more importantly CORRECT
CURES" Phil Rogers POPULAR
COMPUTING WEEKLY JAN 85

FOR SPEED - "One firm at least can
effect any necessary repairs over the
counter in 40 minutes. Based in
Manchester, MANCOMP can offer
what is arguably the FASTEST
turnaround in the business to personal
callers" CHASIS Magazine JUNE 1985

THIS IS WHY Spectrum users from
London, Cornwall, Scotland,
Birmingham, Liverpool, Coventry,
Bristol, Glasgow, C.M. etc.
AUSTRALIA, AUSTRIA, BELGIUM,
SCOTLAND, GERMANY, HOLLAND,
ROMANIA, SWITZERLAND, SWITZERLAND

NEW GUINEA, SAUDI ARABIA,
SWEDEN, SWITZERLAND and
ZIMBABWE - and their Spectrums to
MANCOMP for repair!

24 HR. TURNAROUND NO-QUILLER
GUARANTEE. NO HIDDEN COSTS.

Because we repair hundreds of
computers every week, we are
able to pass on our "component"
buying discount to YOU in
lower prices... Z80A cpu
£1.50, 41 16 50p, Upgrade
fixed £18.95
- we bring down the prices for
repairs and component!

(We may refuse to revive
spectrums suffering from
attempted D.I.Y. repairs!)

Every part sent by
Royal Mail Registered Post and insured
for return journey.
(For next day delivery include £1.50
extra).

(Security by prior arrangement).
On site maintenance for Apple,
IBM's and most makes of printers
also available.

Guaranteed air response!
WHY DELAY - OUR ESTIMATES ARE
FREE AND WITHOUT OBLIGATION. IF

YOU DO NOT LIKE OUR ESTIMATE,
WE WILL RETURN THE COMPUTER
AND REFUND THE POSTAGE INCURRED

MANCOMP LTD
(Dept PCW25)

Printworks Lane, Liversham,
Manchester M13 3UP

Phone 061-224 1888.

OR 061-224 9888.

OPEN MON - SAT 9am to 7pm



What we do today...
others do tomorrow!

LONDON COMPUTER REPAIR CENTRE

- * Spectrum, Commodore, BBC,
Atari, Amstrad etc.
- * Low cost repairs from £12.00
- * Collection & delivery optional
- * Used Micro's bought, sold,
exchanged.

Call NIGEL: 01-863 7186

MICRO SUPPORT

Unit 3, 15 Springfield Road,
Harrow, Mids., HA4 10F
091.3

SINCLAIR REPAIRS

SY. TRUMPLUS £12.00
KEYBOARD £8.00
INTERFACER MICRODRIVE £17.00 each

All prices are fully inclusive of p/p and VAT
Send Cheque with computer only unless
power supply suspected. Callers Welcome.

I. T. WESTERN ELECTRONICS

Unit F2A & F3
Avenue Enterprise Park
Newbroughton Road,
Newbham, Wills
Tel: (0225) 706617 279L5

SPECTRUM REPAIRS ONLY ONE COMPANY OFFERS

- Over 15 years computer maintenance experience on all types of systems from Mainframes to Micros.
- We repair ALL Spectrums sent to us. Not only the profitable ones. IF they are sent to us first. We receive many that have been tampered with by other repair companies and returned to their owners unprepared - often further damaged by an attempted repair.
- An honest six months parts and labour written guarantee on the WHOLE computer - not only on the fault repaired - read the other adverts carefully.
- Free update and overhaul with every repair - it is in both our interests for your computer to be reliable.
- NO "FREE" games - your money is best spent on top quality components and professional computer engineers.
- All Spectrums are returned fully insured by 1st Class post. Normally within 24 hours - please do not send power supplies.
- All-inclusive price of £20 or £15 without update and guarantee, regardless of the number of faults found.

M. P. Computer Maintenance,
The Laurels (Dept 1),
Wendling, Dereham,
Norfolk NR19 2LW
Tel: 036287 327



... and his team
of computer repair
specialists are here
to offer a complete
professional service.

FREE £15 carriage with every Commodore 64 repair	Spectrum.....£17.99
	Commodore 64.....£29.95
	BBC.....£29.95
	(including parts & p/p)
	FREE software with every Spectrum repair

We also repair Amstrad, Oric, Atari,
Vic 20, Printers, Disc drives etc.

- * WHILE-U-WAIT SERVICE
- * FAST TURN AROUND
- * 3 MONTH GUARANTEE
- * FREE SOFTWARE
- * DIY COMPONENTS

ZEDEM
COMPUTERS LIMITED
2 Kimbolton Road
Bedford MK40 2NR

Call (0234) 213445/213832 7 days a week 24 hr. answering service

24 HOUR

COMPUTER REPAIR CENTRE

The only **AMSTRAD SPECIALISTS**
recommended by Amstrad

**NO HIGH
FIXED
PRICE
REPAIR!**

**FREE
SOFTWARE WORTH
£35
WITH EVERY
REPAIR**

Repairs also undertaken for all the
following computers:
**SPECTRUM,
COMMODORE, ATARI,
BBC, IBM**

The established
company with a proven reputation

Over the years we have built up an enviable reputation in the UK for computer repairs, which is second to none. This is based on many years experience in repairing Spectrum, Commodore, BBC and other leading makes – and we were the first AMSTRAD repair centre anywhere. This is why we have customers all over the world.

We are the best, forget the rest, look what we offer

- No high fixed price – you only pay what the repair actually costs.
- While-U-Wait Service – spare parts for all leading computers – available over the counter.
- State of the art test equipment to provide comprehensive test report and locate faults.
- Repairs to all leading makes of computer.
- Amstrad specialist.
- Spectrum rubber keyboards repaired for only £8.95.
- Commodore 64's, Vic 20's, Atari, Commodore 16's and Plus 4's repaired.
- Discounts for colleges, schools etc.
- Every computer repaired by us is completely overhauled and tested before return.
- All computers returned carriage paid and covered by insurance.
- Three months guarantee included.
- Free Software worth £35 with every repair.

**DON'T DELAY –
ACT TODAY
It's as easy as
ABC!**

A Simply send your computer securely packed, together with a cheque or postal order for the maximum fee to the address below. Your computer will be repaired and returned to you within 24 hours together with the balance of the fee and your FREE £35 worth of software.

B Or if you prefer a written quotation just send £2.50 to cover post & packing.

C Alternatively just quote your Access or Visa card number.

**AMSTRAD
REPAIRS
from
£9 to £35**

**BBC
REPAIRS
from
£12 to £20**

**SPECTRUM
REPAIRS
from
£7 to £19.90**

**COMMODORE
REPAIRS
from
£12 to £35**

Trade orders
welcome

SPECIALIST COMPUTER REPAIR CENTRE

28 College Street, WORCESTER WR1 2LS
Telephone: 0905-611072/613023



WE SET THE STANDARD BY WHICH EVERYONE ELSE IS JUDGED

MEGA-MAIL!

THE RELIABLE NEW NAME IN MAIL ORDER

SPECTRUM 48K		Commodore 64	
HEARTLAND	8.65*	PARALLAX	8.65*
I.C.U.P.S.	8.65	JEWEL OF DARKNESS	12.95*
PAPER BOY	8.65*	VIDEO P.S.	8.65
STAINLESS STEEL	8.65*	VIDEO P.S.	8.65
G.A.C.	12.95	KNIGHT GAMES	8.65
LEADER BOARD	8.65*	TRAP	8.65
MIAMI VICE	8.65*	G.A.C.	12.95
INTERNATIONAL RUGBY	8.65*	DRAGONS LAIR	8.65
MINDS TOME	8.65*	HEARTLAND	8.65*
DARK SCEPTRE	8.65*	MANDRAGORE	12.95*

ATARI COMPUTERS		AMSTRAD COMPUTERS	
GHOSTBUSTERS	8.65	PACIFIC	8.65
QUESTION	N/A	CONTAMINATION	8.65
POLAR PIERRE	8.65	STAINLESS STEEL	8.65
CRUS EUROPE	12.95	KNIGHT GAMES	8.65
ARCHON	8.65	INTER KARATE	8.65
		PRO TENNIS	8.65
		MONSTERS OF MURDAR	8.65
		GHOST AND GOBLINS	8.65
		BATHAN (CPM)	8.65
		FAIRLIGHT (CPM)	8.65
		JEWEL OF DARKNESS (CPM)	8.65

MSX COMPUTERS	
STEVE DAVIS	7.85
JACK THE HIPPER	7.85

* dependant on release

For a full price list
send a S.A.E. to.....

MEGAMAIL
12 EYTRICK SQUARE
TOWN CENTRE
CUMBERNAULD
GLASGOW G67 1ND

Game	Computer	Price
1)		
2)		
3)		
4)		
NAME	I enclose a CHEQUE/PO	
ADDR.	for total=	

WE STOCK ALL CBM64, SPECTRUM, AMSTRAD, ATARI, ST, ELECTRON, BBC, MSX and **AMIGA**

10% OFF? ... YES!

ON SOFTWARE OVER £3.00

WE TAKE 10% OFF R.R.P.

★ e.g. Mission Ad (r.r.p. £9.95) ★
our price £8.95★ ZX80/6502 programmer/s wanted ★
for top quality software projects

COME AND SEE US AT:

GALARY SOFTWARE
1st Floor, The Arndale Centre,
Wandsworth SW18
Tel: 01-870 4941

HOME ACCOUNTS

Put your house in order! Probably the best home use for your computer! Comprehensive coverage of bank accounts, credit cards, HP, standing orders etc. Inbuilt accuracy check for all transactions. Cashflow projection. For all Amstrads, Commodores and Spectrums.

DISCUS,
18 BEDFORD ROAD,
ILFORD IG1 1EJ
Tel: 01-514 4141
(24 hours 'live')

(15)

K-SOFT

"The Spore" PCW says
 "Excellent piece of interactive fiction"
 "Merhowmie's Light" guiding light says: "Most gripping quilled adventure I have yet come across - totally original - I only wished I had written it."
 Graphic Adventures for Spectrum 48K. £2 each direct from K-SOFT, 118 Kingsway, Ossett, West Yorkshire WFS 8DQ.

400/800

XL/XE

LOOK

ATARI OWNERS

Are you having difficulty finding suitable software? If so, then look no further. We have available for both hire and purchase one of the largest selections of both UK and American titles to choose from. Games and Utilities for all ages. Hardware and add-on utilities at discount prices and special deals regularly being offered. If you would like further information please send a large s.a.e. to:-

CHARWOOD PRODUCTS AND GAMES
30A Warwick Avenue, Quorn, Loughborough
Leicestershire LE12 8HD
Tel: 0509 412604

DUPLICATION

CASSETTE COPIES

50 C10's FOR ONLY £40 INC. P + P
 FROM YOUR CASSETTE MASTER
 IN REAL TIME. PLEASE PACK
 IN FOIL AND SEND CHEQUE TO—
SOUNDS GOOD
CLEAR CROFT, BOTTOM LAKE,
SEER GREEN, BUCKS HP9 2UH.
TEL: (04948) 5900

28P23

FAST reliable service of DATA DUPLICATION for most computers. Comprehensive facilities include: master recording, blank disc/cassettes, blank or printed worksheets, competitive prices, fast turn-around.



DATA DUPLICATION: Telephone 021-543 7113 for further details and prices, or write to M.G. Copies, Warwick Chambers, 14 Corporation Street, Birmingham B2 4RN.

There's a Dealer near you . . .

ESSEX

ESTUARY PERSONAL COMPUTERS

310 CHARTWELL NORTH
VICTORIA CIRCUS SHOPPING CENTRE
SOUTHEAST ON SEA
Tel: (0702) 614131

PL100

NOBLES

14-17 EASTERN
ESPLANADE
SOUTHEAST-ON-SEA,
ESSEX
Tel: (0702) 63377/8

PL100

GLASGOW

THE COMPUTER DEPOT
205 BUCHANAN STREET
GLASGOW G1 2JZ
Tel: (041) 332 3944

PL100

MEGABYTE

12 ETRICK SQUARE
CUMBERNAULD
067 1ND
0236 738398

20P/L1

HEREFORDSHIRE

HONEYSETT COMPUTERS
17 UNION STREET
HEREFORD HR1 2BT
Tel: (0432) 279404
ASK ABOUT
CLUNKER SALE

PL101

KENT

ANIROG COMPUTERS
29 West Hill
Dartford
Kent
Tel: (0322) 91649

PL100

MICROWAY COMPUTERS
39 HIGH STREET
RAINFHAM, KENT
Tel: (0634) 376702

PL102

MIDDLESEX

INNOVATIONS
COMPUTER & VIDEO
9 HARMONDSWORTH ROAD
WEST DRAYTON
MIDDLESEX UB7 9JS
Tel: (0895) 420457

PL102

LEEDS

WUGGOCOCO

NORTHWOOD HOUSE
NORTH STREET
LEEDS LS7 2AA
Tel: (0532) 458800

PL102

LONDON

GALLERY SOFTWARE
1st FLOOR
THE ARDALE CENT,
WANDSWORTH,
LONDON SW18
Tel: 01-870 4941

20P/L25

GAMES WORLD
129 KING STREET
HAMMERSMITH
LONDON W6
Tel: 01-741 4467

PL110

LIVERPOOL

NABITCH
COMPUTERS
SPECIALISTS IN AMSTRAD
PCW8256 - PCW8512
SOFTWARE & HARDWARE
MESSAGEBOMB INNOVATION CENTRE
131 MOUNT PLEASANT
LIVERPOOL L3 5TF
051-709 0123/708 8775
Software Design Service Available

20P/L1

NORFOLK

THETFORD MICROS
SPECIALISTS -
COMPUTER REPAIRS
21 GUILDHALL STREET
THETFORD
NORFOLK
(0842) 61645

PL110

SUSSEX

GATWICK COMPUTERS
62 THE BOULEVARD
CRAWLEY, SUSSEX
Tel: (0293) 26240/37842

PL102

SURREY

ULTIMA
UNIT 28
WHITE LION WALK
GUILDFORD
(0483) 506939

20P/L801a

POSITRON COMPUTING
15 CENTRAL PRECINCT
LLANELLI
SAE15 1YE
0554 759624

AMSTRAD 8256
UPGRADE

24P/L20

YORKSHIRE

YORK COMPUTER CENTRE
7 STONEGATE ARCADE
YORK
Tel: (0904) 641862

PL110

Access

**Book
your
Classified
or
Semi-display
advert by
Credit
Card**



**Call
Rodney
Woodley
on
01-437 4343**



New Releases

John Cook looks through this week's new arrivals

Pick of the week

Amstrad CPC

Program *The Fourth Protocol Type Strategy Micro* Amstrad CPC **Price** £14.95 **Supplier** Aniolsoft, 68 Long Acre, Covent Garden, London WC2.

Program *Powerplay Type Strategy Micro* Amstrad CPC **Price** £9.95 (tape) £12.95 (disc) **Supplier** Arcana Software Design, Avondale Workshops, Woodland Way, Kingswood, Bristol, Avon BS15 1QH.

Program *L'Affaire Vera Cruz Type Strategy Micro* Amstrad CPC **Price** £9.95 (tape) £14.95 (disc) **Supplier** Infomagames, Mitre House, Abbey Road, Enfield, Middlesex.

Program *Melbourne Draw Type Utility Micro* Amstrad CPC **Price** £14.95 (tape) £24.95 (disc) **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston-upon-Thames, Surrey KT1 4DB.



Program *Impossible Mission Type Arcade Micro* Amstrad CPC **Price** £9.99 (tape) £14.99 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program *Mission Elevator Type Arcade Micro* Amstrad CPC **Price** £9.95 (tape) £14.95 (disc) **Supplier** Micropool, 4 Mercury House, Calvea Park, Aldermaston, Berks RG7 4QW.

The one-way tide of British software from Us to Them appears to be

getting a little more reciprocal – what with Infomagames, Loricels, Ere Informatique and the like. Now add another name to the ever growing list, Micropool.

Micropool have kicked off in this country with *Mission Elevator*, a nicely worked version of a coin-op that did quite well around a year back.



Add a hint of adventure, strategy elements, a time limit, some great touches of humour together with smooth and colourful graphics – what you have is a little cracker of a game. I only hope it doesn't get drowned in the mass of titles that are released and announced this time of year.

Whatever, it's very highly recommended.

Amstrad PCW 8256/8512

Program *Biology 1 Type Educational Micro* Amstrad PCW **Price** £12.95 **Supplier** School Software, Meadowvale Estate, Raheen, Limerick, Ireland.

Program *Chemistry 1 Type Educational Micro* Amstrad PCW **Price** £12.95 **Supplier** School Software, Meadowvale Estate, Raheen, Limerick, Ireland.

Program *Physics 1 Type Educational Micro* Amstrad PCW **Price** £12.95 **Supplier** School Software, Meadowvale Estate, Raheen, Limerick, Ireland.

Program *Paperboy Type Arcade Micro* Spectrum **Price** £9.95 **Supplier** Elite Systems, Anchor House, Anchor Road, Aldridge, Birmingham.

At last, here it is, that long awaited coin-op conversion – and potential *Paperboys* everywhere will be glad to know that it's well up to scratch.

OK, the main display is single colour, but that tricky sideways scroll has been well executed, and the gameplay is as close to the original as you could want. The only things I can recall being missing are the radio controlled cars that nag you if you go too slow and the groupie with the 'I Luv Paperboy' placard in the adoring crowd at the end of each level.

I know several people who were slightly disappointed with the Spectrum *Ghosts n' Goblins* when compared to the

stunning Commodore version – I think they'll be pleased with this one.

Another soon-to-be-released Spectrum game from Elite we managed to get a peek at was the long awaited *Scoby Doo*. In this, you play the part of everyone's favourite dog (my third favourite as it happens, after Snoopy and Boot) who must run along platforms and up ladders avoiding and zapping some brilliantly animated nasties, to rescue a member of the gang (trapped in a giant test tube).

Again, the main display is single colour, but the sprites are big and very well done – what more would you expect of the Carter/Follis Gargoyles team? Gameplay is a bit thin on the ground, but I can't remember the cartoon ever being intricate of plot either.

If only they were giving away free Scooby Snacks as part of the deal...

Atari

Program *Collapse Type Arcade Micro* Atari XL/XE **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program *Ultima IV Type Adventure Micro* Atari **Price** £19.95 (disc only) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

BBC/Electron

Program *System Delta Type Utility Micro* BBC B **Price** £64.95 (Rom) **Supplier** Minerva Systems, 69 Sidwell Street, Exeter, Devon EX4 6PH.

Program *Myorem Type Adventure Micro* BBC B/Electron **Price** £9.95 (tape) £12.95 (disc) **Supplier** Robico Software, 3 Fairland, Llantrisant, Mid-Glamorgan CF7 8QH.

C16/Plus 4

Program Jail Break Type Arcade **Micro** C16/Plus 4 **Price** £2.99 **Supplier** Bug-Byte, Victory House, Leicester Place, London WC2.

Program Matrix/Laserzone Type Arcade **Micro** C16/Plus 4 **Price** £6.95 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

CBM 64

Program Gods and Heroes Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Aftermath Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Spiky Harold Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Collapse Type Arcade **Micro** Commodore 64 **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Heart of Africa Type Strategy **Micro** Commodore 64 **Price** £14.95 (disc only) **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

Program Droids Type Arcade **Micro** Commodore 64 **Price** £7.95 (tape) £9.95 (disc) **Supplier** Anglosoft, PO Box 60, Coventry CV1 5SX.

Program Ultima IV Type Adventure **Micro** Commodore 64 **Price** £19.95 (disc only) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program Rebel Planet Type Adventure **Micro** Commodore 64 **Price** £9.95 (tape)

£14.95 (disc) **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Program Powerplay Type Strategy **Micro** Commodore 64 **Price** £9.95 (tape) £14.95 (disc) **Supplier** Arcana Software Design, Avondale Workshops, Woodland Way, Kingswood, Bristol, Avon BS15 1QH.

The single English trait that has sold three million copies of *Trivial Pursuit* in the UK and keeps tens of millions glued to radio and TV when programmes like *Mastermind* and *Brain of Britain* are on, is vanity.

Quietly (sometimes not so quietly), everyone thinks they are that little bit smarter than everyone else - while collectively, we know we are better than everyone else - and getting all the right answers in a quiz game is a typically understated way of rubbing it in.

Yet, while there have been several attempts to get a quiz format on to a home computer, to date they have been dismal to a man. So it's nice to see a program like *Powerplay*. *Powerplay* combines a

can answer a question first. Only, to earn the right to move a piece, first you must answer a question correctly (you choose one out of four options). Getting it right lets you move, and also earns you Brownie points with Zeus, which you can save up to 'mutate' into a more powerful piece... only then your questions get harder.

Nicely balanced, this is an original game worthy of the highest praise... it's been out on the BBC for a while, but now Amstrad and Commodore owners can get to grips. You can write your own questions too - and use them once the 2000 odd supplied have run out.

Of course, with *Trivial Pursuit* being launched at the PCW show, you might be tempted to hold off - but rest assured that *Powerplay* is a different kettle of fish altogether. A genuine original idea, compared to a rehashed version of something you've probably already got in a box (which you have already paid handsomely for to boot).

Domark's latest will get to Number One, of course, on name alone - but I would say the smart guys will save themselves a fiver and take a look at *Powerplay*.

£7.95 **Supplier** CRL, 9 Kings Yard, Carpenters Road, London E15.

Program Decorating Blues Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Death Ball Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Alpha Omega, CRL Group, 9 Kings Yard, Carpenters Road, London E15.

Program Free Text Database Type Utility **Micro** Spectrum (with Microdrives) **Price** £9.75 **Supplier** Roybot, 45 Hullbridge Road, Rayleigh, Essex SS6 9NL.

Program Buccaneer Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Firebird, 74 New Oxford Street, London WC1.

Program Kane Type Arcade **Micro** Spectrum **Price** £1.99 **Supplier** Mastertronic, 8-10 Paul Street, London EC2.

Program Xarg Type Arcade **Micro** Spectrum **Price** £9.99 **Supplier** Electric Dreams, 31 Carlton Crescent, Southampton, Hants SO1 2EW.

Program Terrors of Trantos Type Adventure **Micro** Spectrum **Price** £8.95 **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2.

Program Rescue from Doom Type Adventure **Micro** Spectrum **Price** £2.50 **Supplier** D Edgar, 1 High Park, Erskine, Scotland PK8 7HY.

Program Dynamite Dan II Type Arcade **Micro** Spectrum **Price** £7.95 **Supplier** Mirrorsoft, Purnell Book Centre, Paulton, Bristol.

Program L'Affaire Vera Cruz Type Strategy **Micro** Spectrum **Price** £8.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex.



MSX

Program International Karate Type Arcade **Micro** MSX **Price** £7.95 **Supplier** Endurance Games, 28 Little Park Gardens, Enfield, Middx EN2 6PG.

Program L'Affaire Vera Cruz Type Strategy **Micro** MSX **Price** £9.95 **Supplier** Infogrames, Mitre House, Abbey Road, Enfield, Middlesex.

Program BC II - Grog's Revenge Type Arcade **Micro** MSX **Price** £9.95 **Supplier** US Gold, Unit 2-3, Holford Way, Holford, Birmingham B6 7AX.

Spectrum

Program Room 10 Type Arcade **Micro** Spectrum **Price**

Luck of the Irish

Having read the article by David Ridge on running a software company, I thought my own experiences might be of interest. Until a couple of months ago I was a partner in the only software house (that I know of) in Northern Ireland producing games.

It started three and a half years ago as an idea at a party. I was then a data processing programmer maintaining CBasic programs and writing DBase II packages.

One of us, Colin Gordon, went to town and quickly wrote a working game. This was the prototype *Cityfighter* for the Spectrum.

A bit of capital came from a third partner and we were in business from January 1984.

We got an order from a distributor for a few hundred Spectrum tapes, so that set us off on the production road. But unfortunately the world didn't go wild over *Cityfighter*.

The summer of 1984 was a bit of a bleak time. What kept us going was some business software and a Turbo tape system which we sold to other software houses.

We took on a programmer on the YTP scheme and helped him complete a game he had started, called *Moris Meets the Snobugs* the sale of which gave us a lot of contacts with mainland UK software houses.

Then we came in contact with Mogul software, run by an Irishman. He brought us some work doing a conversion of a 64 game called *Fire Ant* on to the Amstrad and

C16. From the *Moris* contacts we also got to convert *Frankenstein* for PSS and *Redcoats* for Lothlorien, both on to the Amstrad.

So the start of 1985 saw us with some work, though not a great deal. Mogul had asked us to convert from 64 to Amstrad its game *Murphy*. We did that, but then Mogul had pulled out of the software field, leaving us with a game and no money.

Now *Murphy* is the same game as *Gilligan's Gold* by Ocean who lacked an Amstrad version, so we phoned them up. Ocean took it in a flash and asked us to start doing conversions for them. From this point, Choice Software never looked back.

The work has come thick and fast since then and the following Amstrad games were written by Choice. *Daley Thompson's Decathlon* (and *Supertest*), *Beachhead*, *Raid*, *Kung Fu Master* and *Rambo*. I should give credit to Colin for most of these as he deserves the praise.

With the increase in workload came more staff and by the end of '85 there were five full time staff plus two partners.

From the start of 1986 *Kung Fu Master*, *Rambo* and *Supertest* were done for Ocean, a Spectrum version of *Theatre Europe* for PSS and three versions of *Johnny Reb II* for Lothlorien. I left in May to do my own thing, but Choice still continues.

We didn't make a fortune. The first year was awful but years two and three brought

in a decent income plus a car. Had I gone back to business software I would have made more money and have smaller bags under the eyes, but it was worth it.

From these two and a half years I would offer some advice to anyone considering doing original or conversion work on a freelance basis.

Doing business with software houses: avoid royalties if you can and get a one-off payment.

On the subject of conversions: try and get the agreement for doing versions of the game on other computers. It isn't that hard to move software and it is even easier if they have the same processor. Learning 6502 is easy if you know Z80, though it's much nicer rewriting a 6502 program on to Z80.

Get a good development system. If you program on the micro direct then you are making life incredibly hard for yourself.

The cheapest system I have ever seen was two Spectrums linked by a cassette lead. The most expensive was a mainframe (£60,000+) Vax computer.

The cheapest way to get such a system is to borrow or take as payment one from the people you are doing work for. The Tatung Einstein is a very popular machine for this purpose. I used one with our own customised assembler and a full screen editor.

Finally don't expect to make a million.

David Bolton

NEXT WEEK

Special Supplement

The Amstrad PCW micros

From light pens, 8256 upgrades and small business software packages to communications... the PCW supplement takes you through the wide variety of hardware and software that is now available.

Hardware

Paying Saga a Compliment — its latest printer on the market is the model to be bundled with Saga's Compliment micro. John Lettice investigates.

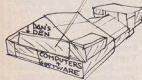
More power to your Amstrad CPC: Vortex is bringing out a 5 $\frac{1}{4}$ inch disc drive for the CPC series. Will this give you a wider range of available CP/M programs? Find out in John Mawhood's article next week.

Games

A couple of treats in store for the discerning games player. FTL, the new label from Gargoyle's top programming team, gets the colour treatment, as does the long-awaited *Fist II*, sequel to last year's block-busting *Exploding Fist*.

Hackers

The basic mouse won't really help you very much...



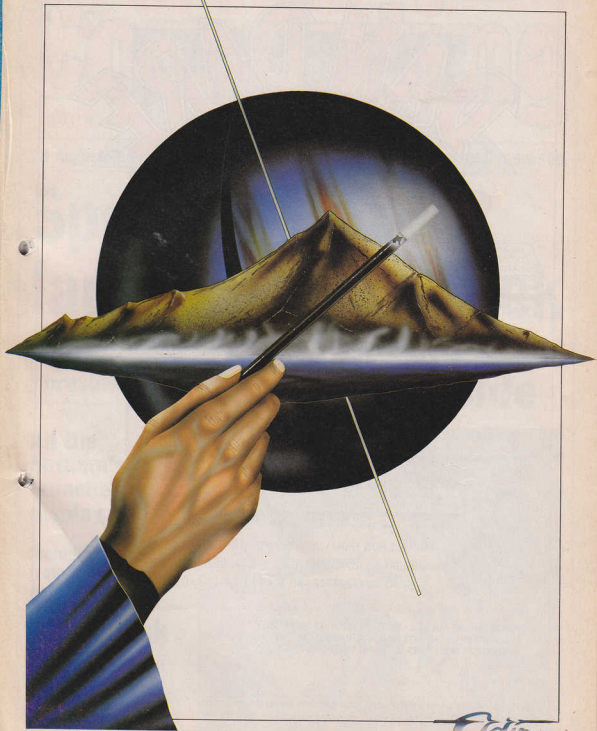
...but the mark II has some extra features which make it a bit simpler to use



And when we move up to the mark III things get REALLY simple



HEARTLAND



SALES 01-379 6755
01-240 9334
INTERNATIONAL 44-1-379 6755
SPECTRUM 48K - COMMODORE 64/128 - AMSTRAD/SCHNEIDER



Edin
COMPUTER GRAPHICS LTD.

DAN DARE

PILOT
OF THE FUTURE



THE STORY SO FAR...
COLONEL DAN DARE HAS LOCATED THE ASTEROID BASE OF
HIS ARCH ENEMY - THE EVIL MEKON... HE MUST DESTROY
THE BASE AT ALL COSTS! BUT FIRST, HE MUST DEFEAT
THE DEADLY TREES AND THEIR EVIL MASTER...

JOIN COLONEL DARE AND HIS VALIANT COMPANIONS
ON THEIR JOURNEY THROUGH PERIL IN...

DAN DARE - PILOT OF THE FUTURE.
THE FATE OF THEIR MISSION DEPENDS ON YOU!!

TO BE CONTINUED...

11 CPC - DAN DARE LTD
Part of the Dan Dare Asteroid Collection
Approved Workbooks by Dan Dare Ltd

AVAILABLE NOW FROM VIRGIN GAMES ON SPECTRUM 48/128,
COMMODORE 64/128 AND AMSTRAD CPC RANGE OF COMPUTERS
£9.95 ON CASSETTE AND **£14.95** AMSTRAD DISC

PLEASE SEND ME DAN DARE - PILOT OF THE FUTURE IMMEDIATELY!
SPECTRUM 48/128 CASSETTE £9.95 ☐ COMMODORE 64/128 CASSETTE £9.95 ☐
AMSTRAD CPC CASSETTE £9.95 ☐ AMSTRAD CPC DISC £14.95 ☐

Name
Address

Please make cheques or postal orders to Virgin Games Ltd. Please do not post cash.
VIRGIN GAMES LTD, 2/4 VERNON YARD, PORTOBELLO ROAD, LONDON W11 2DX

